Sequim, Washington

JOHN WAYNE MARINA – Property Condition Assessment

March 2019

PREPARED BY

ReidMiddleton

John Wayne Marina Property Condition Assessment
Sequim, Washington
March 2019

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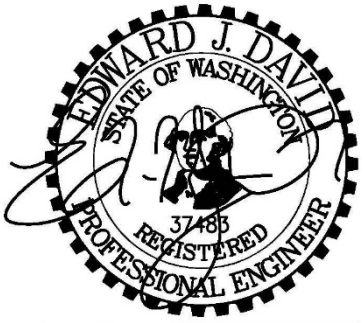

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Table of Contents

Appendices

Tables

Figures

INTRODUCTION & BACKGROUND

The Marina was built during the early 1980s and then expanded in the late 1980s and early 1990s. The Marina has more than 299 slips, ranging from 15 to 50 feet long with end tie locations up to 100 feet long. The dock facilities have been maintained, but no docks have been replaced since the original construction. The Marina's facilities also include a boat launch ramp, fuel facilities, sewer pump-out, and upland buildings with a restaurant, showers, laundry, and banquet facilities.

The City of Sequim requested that Reid Middleton perform an above- and below-water condition assessment of the marina dock and upland facilities. The intent of the assessment is to document the current condition of each facility component for the City and develop probable construction and maintenance costs to keep the marina operating for the next 20 years.

Reid Middleton was assisted by subconsultants Echelon Engineering (who provided underwater inspection of portions of the perimeter bulkhead, marina piles, and floating docks), Sazan (mechanical systems inspection), and Harbor Power (electrical systems inspection). The Reid Middleton team performed a condition assessment of the waterfront facilities on January 23 through 25 and February 6, 2019. The results are provided in this report, including current conditions and estimated remaining service life.

Figure 1. John Wayne Marina.

CONDITION ASSESSMENT – DOCK FACILITIES

The waterfront facilities assessed include fixed piers, gangways, floats, piles, boat ramp, and utilities at boat maintenance and repair areas.

The visible structural components of each facility were inspected. The results of the site observation are provided below and summarized in Table 1, followed by an overall assessment of the system.

Reid Middleton conducted a visual observation of the fixed piers, including piles and superstructure (pile caps, stringers, decking, railings); gangways, including attachment points and landings; and the above-water portions of the marina floats and piles, including floats, walers, rub boards, fenders, and hardware. Observation included a Level 1 visual inspection, looking for areas of gross damage and deterioration. Marina utility systems were also included in the condition assessment, with Harbor Power reviewing the electrical system.

Echelon inspected the submerged portions of the floats and the associated piles. Observation included a Level 1 visual inspection to identify gross damage or deterioration, including spalling, cracking, or other significant damage to the concrete floats and piles, and a Level 2 cleaning and examination of the concrete floats at random locations and in areas of potential deterioration, with hammer sounding and probing at suspect and representative areas along the length of 10 percent of the piles.

Inspections were performed in accordance with the methods described in the ASCE *Manuals and Reports on Engineering Practice No. 130 (MOP 130); Waterfront Facilities Inspection and Assessment*.

The general condition of each element and specific damage conditions observed are discussed below. A plan of the marina, general condition, and noted locations with condition issues is shown in Figure 2. Photos of the various elements are included in Appendix A.

The following observation condition ratings are used in this report:

Good	No visible damage or only minor damage is noted. No repairs are required.
Satisfactory	Limited minor to moderate deterioration was observed. No repairs are required.
Fair	Primary elements are sound, but minor to moderate defects or deterioration are observed. Repairs are recommended, but the priority of the recommended repairs is low.
Poor	Advanced deterioration is observed on widespread portions of the structure. Repairs may need to be executed with moderate urgency.
Serious	Advanced deterioration or breakage may have affected the primary structural components significantly. Local failures are possible, and repairs should be carried out on a high-priority basis.

Critical	Extremely advanced deterioration or breakage has resulted in localized failure(s) of primary structural components. More widespread failures are possible or likely to occur, and repairs should be carried out on a high-priority basis.

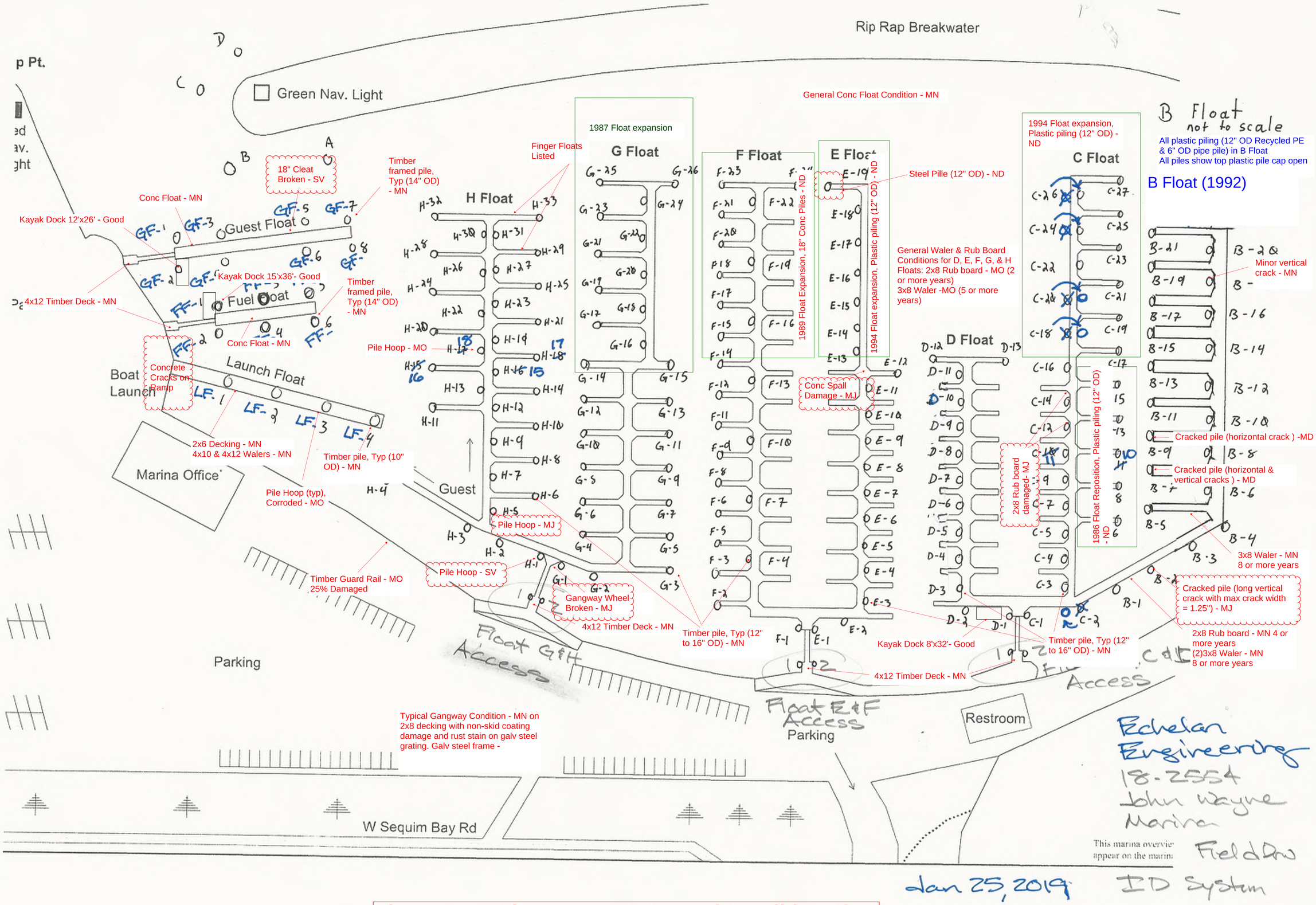

Figure 2 - Marina Layout & General Condition Plan

Table 1. Condition of Dock Facilities.

Item	Photo	Rating	Existing Condition
Fixed Pier Floats B-D, Gangway, Gate Structure	1, 2	Satisfactory	Pile cap is in satisfactory condition. It consists of a creosote-treated timber on top of two support piles. Stringers are creosote-treated timbers and are in satisfactory condition, with only minor surface fungal decay observed. Decking is 4x12 pressure treated timber and is in fair condition, with some abrasion wear. Railings consist of painted timber posts and rails and are in satisfactory condition with only paint touch-up needed. The gangway is in fair condition overall. There is rust on the grating and the non-skid painted 2x8 timber decking is worn. The galvanized steel pipe railings and structure are in satisfactory condition with minor surface rust. The gate structure consists of painted pressure-treated timber framing, galvanized steel tube gate, and tin roofing. The gate structure is in satisfactory condition overall with minor surface rust.
Fixed Pier Floats E & F, Gangway, Gate Structure	3, 4	Satisfactory	Pile cap is in satisfactory condition. It consists of a creosote-treated timber on top of two support piles. Stringers are creosote-treated timbers and are in satisfactory condition, with only minor surface fungal decay observed. Decking is 4x12 pressure-treated timber and is in fair condition, with some abrasion wear. Railings consist of painted timber posts and rails and are in satisfactory condition with areas that have peeling/flaked paint and timber deterioration (especially the top rail). The gangway is in fair condition overall. There is rust on the grating and the non-skid painted 2x8

Table 1. Condition of Dock Facilities.

Item	Photo	Rating	Existing Condition
			timber decking is worn. The galvanized steel pipe railings and structure are in satisfactory condition. The gate structure consists of painted pressure-treated timber framing, galvanized steel tube gate, and tin roofing. The gate structure is in satisfactory condition overall.
Fixed Pier Floats G & H, Gangway, Gate Structure	5, 6	Satisfactory	Pile cap is in satisfactory condition. It consists of a creosote-treated timber on top of two support piles. Stringers are creosote-treated timbers and are in satisfactory condition, with only minor surface fungal decay observed. Decking is 4x12 pressure-treated timber and is in fair condition, with some abrasion wear. Railings consist of painted timber posts and rails and are in fair condition, with areas that have peeling or flaked paint and timber deterioration (especially the top rail). The gangway is in fair condition overall. There is rust on the grating, and the non-skid painted 2x8 timber decking is worn. The galvanized steel pipe railings and structure are in satisfactory condition. The gangway has one broken wheel. The gate structure consists of painted pressure-treated timber framing, galvanized steel tube gate, and tin roofing. The gate structure is in satisfactory condition overall.
Fixed Pier Piles	7	Satisfactory	Piles are creosote-treated 12- to 16-inch-diameter timber and are all in good to satisfactory condition, with only minor areas of abrasion damage and deterioration observed.
Float B-D Walkway, Float B, Float C, Float D	8, 9, 10, 11, 12, 13, 14, 15	Fair	The concrete floats are in fair condition overall. All show intermittent hairline cracking and minor spalling on the top and bottom decks and side walls, and all have light to moderate marine growth. The concrete tri-frames have some spall and cracking

Table 1. Condition of Dock Facilities.

Item	Photo	Rating	Existing Condition
			damage and are in fair to poor condition. The galvanized steel pile hoops show some rusting and at least minor corrosion. The 3x8 timber walers are in satisfactory condition overall, with minor surface deterioration. The 2x8 timber rub boards are in fair condition, with timber deterioration observed throughout and one location of major damage on the north side of C Float. The thru-rods and associated hardware appear in fair condition, with surface rust observed. The cleats and other hardware are in satisfactory condition. The kayak storage float at the northwest end of Float B-D consists of polyethylene tubs with timber framing and timber decking. The kayak storage float is approx. 8 feet by 32 feet and is in good condition overall with no issues observed.
Floats B-D, B, C, & D Piles	16, 17, 18	Satisfactory to Fair	The piles on B Float and the south side of C Float are plastic piles consisting of a 12-inch-diameter recycled polyethylene pile over a 6-inch-diameter steel pipe pile. The piles are in fair condition overall with some minor cracking observed and the top plastic pile cap open/split. On B Float there are two piles with moderate cracking and one with major cracking in the plastic piles. The piles on the north side of C Float, the B-D Walkway Float, and D Float are creosote-treated timber piles ranging from 12 to 16 inches diameter. These piles are all in satisfactory condition, with only minor areas of abrasion damage and deterioration observed.
Float E-F Walkway, Float E, Float F	19, 20, 21	Fair	The concrete floats are in fair condition overall. All show intermittent hairline cracking, minor spalling, and rust staining. The minor damage is on the top and bottom decks and side walls. All of the floats also have light to moderate marine growth. The concrete tri-frames have some spall and cracking damage and are in fair to poor condition, with one location on D Float with major spall damage. The galvanized steel pile hoops show some rusting and

Table 1. Condition of Dock Facilities.

Item	Photo	Rating	Existing Condition
			at least minor corrosion. The 3x8 timber walers are in satisfactory condition overall with minor surface deterioration. The 2x8 timber rub boards are in fair condition with timber deterioration observed throughout. The thru-rods and associated hardware appear in fair condition with surface rust observed. The cleats and other hardware are in satisfactory condition with some surface rust observed.
Floats E-F, E, & F Piles	22, 23, 24	Satisfactory to Fair	The piles on the west sides of E and F Floats and the E-F Walkway Float are creosote treated timber piles ranging from 12 to 16 inches diameter. These piles are all in satisfactory condition, with only minor areas of abrasion damage and deterioration observed. The piles on the east side of E Float are part of the 1994 float expansion and are plastic piles that consist of a 12-inch-diameter recycled polyethylene pile over a 6-inch-diameter steel pipe pile. The piles are in fair condition overall with some minor cracking observed. The pile at the east end of E Float is a 12-inch-diameter galvanized steel pile that is in satisfactory condition with no damage observed. The piles on the east side of F Float are part of the 1989 float expansion and are 18-inch-diameter concrete piles. These piles are in satisfactory condition with no damage observed.
Float G-H Walkway, Float G, Float H	25, 26, 27, 28, 29, 30	Fair	The concrete floats are in fair condition overall. All show intermittent hairline cracking, minor spalling, and rust staining. The damage is on the top and bottom decks and side walls. All of the floats have light to moderate marine growth. The southeast two finger floats on H Float are also listing slightly. The concrete tri-frames have some spall and cracking damage and are in fair condition. The galvanized steel pile hoops are in fair condition and show some rusting and minor corrosion with three in moderate to severe deterioration due to rust. The 3x8 timber walers are in satisfactory condition overall with

Table 1. Condition of Dock Facilities.

Item	Photo	Rating	Existing Condition
			minor surface deterioration. The 2x8 timber rub boards are in fair condition with timber deterioration observed throughout. The thru-rods and associated hardware appear in fair condition with surface rust observed. The cleats and other hardware are in satisfactory condition with some surface rust observed.
Floats G-H, G, & H Piles	31	Satisfactory	The piles are creosote-treated timber piles ranging from 12 to 16 inches diameter. These piles are all in satisfactory condition, with only minor areas of abrasion damage and deterioration observed.
Guest Float Pier, Gangway, Float, and Piles	32, 33, 34, 35, 36, 37, 38	Satisfactory	Pile cap is in satisfactory condition. It consists of a creosote-treated timber on top of two support piles. Stringers are creosote-treated timbers and are in satisfactory condition, with only minor surface fungal decay observed. Decking is 4x12 pressure treated timber and is in fair condition, with some abrasion wear. Railings consist of painted timber posts and rails and are in satisfactory condition. The gate structure consists of painted pressure-treated timber framing, galvanized steel tube gate, and tin roofing. The gate structure is in satisfactory condition overall with minor surface rust. The gangway is in fair condition overall. There is rust on the grating, and the non-skid painted 2x8 timber decking is worn. The galvanized steel pipe railings and structure are in satisfactory condition with minor surface rust. The concrete floats are in satisfactory condition overall. All show intermittent hairline cracking on the top and bottom decks and side walls. All of the floats also have light to moderate marine growth. The galvanized steel pile hoops show some rusting and minor to moderate corrosion. The 3x8 timber

Table 1. Condition of Dock Facilities.

Item	Photo	Rating	Existing Condition
			walers are in fair condition overall with areas of minor to moderate deterioration. The 2x8 timber rub boards are in fair condition with timber deterioration observed throughout. The thru-rods and associated hardware appear in fair condition with surface rust observed. The cleats and other hardware are in satisfactory condition with surface rust observed. One 18-inch cleat on the north side of the Guest Float is broken. The kayak storage float at the northwest end of the Guest Float consists of polyethylene tubs with timber framing and timber decking. The kayak storage float is approx. 12 feet by 26 feet and is in good condition overall with no issues observed. The piles are creosote-treated timber piles approximately 14 inches in diameter. Each pair of piles is connected at the top of the piles with creosote treated timber members thru-bolted through the piles. These piles and associated timber members are all in satisfactory condition, with only minor areas of damage and deterioration observed.
Fuel Float Pier, Gangway, Float, and Piles	39, 40, 41, 42, 43, 44	Satisfactory	Pile cap is in satisfactory condition. It consists of a creosote-treated timber on top of two support piles. Stringers are creosote-treated timbers and are in satisfactory condition, with only minor surface fungal decay observed. Decking is 4x12 pressure-treated timber and is in fair condition, with some abrasion wear. Railings consist of painted timber posts and rails and are in satisfactory condition. The gate structure consists of painted pressure-treated timber framing, galvanized steel tube gate, and tin roofing. The gate structure is in satisfactory condition overall with minor surface rust.

Table 1. Condition of Dock Facilities.

Item	Photo	Rating	Existing Condition
			The gangway is in fair condition overall. There is rust on the grating and the non-skid painted 2x8 timber decking is worn. The galvanized steel pipe railings and structure are in satisfactory condition. The concrete floats are in satisfactory condition overall. All show intermittent hairline cracking on the top and bottom decks and side walls. All of the floats have light to moderate marine growth. The galvanized steel pile hoops are in satisfactory condition. The 4x8 timber walers are in fair condition overall. The 2x8 timber rub boards are in fair condition with some timber deterioration observed. The thru-rods and associated hardware appear in fair condition. The cleats and other hardware are in satisfactory condition. The kayak storage float at the northeast end of the Fuel Float consists of polyethylene tubs with timber framing and timber decking. The kayak storage float is approx. 15 feet by 36 feet and is in good condition overall with no issues observed. The piles are all creosote-treated timber piles approximately 14 inches in diameter except the outer two which are coated-steel piles. Each pair of timber piles is connected at the top of the piles with creosote-treated timber members thru-bolted through the piles. These timber piles and associated timber members are all in satisfactory condition, with only minor areas of damage and deterioration observed. The steel piles are in serious condition due to heavy corrosion and section loss from the intertidal zone to the mudline.
Boat Launch Concrete Ramp, Float, and Piles	45, 46, 47, 48, 49, 50, 51, 52	Fair	The boat launch concrete ramps have significant cracking throughout the ramp panels and are in fair condition overall. The boat launch floats consist of foam flotation filled tires with 4x10 and 4x12 timber framing and 2x6 timber decking. The timber framing has areas of abrasion and fungal damage and is in fair

Table 1. Condition of Dock Facilities.

Item	Photo	Rating	Existing Condition
			condition overall. The timber decking is in fair condition with fungal damage at the board ends and abrasion damage on the top surface throughout. Float appurtenances are in fair to poor condition with the life ring cabinet cracked, steel pile hoops and float connections rusting significantly, pile rollers/bumpers significantly deteriorated, and rub strip missing or damaged throughout. The piles are creosote-treated timber piles approximately 10 inches in diameter. These piles are all in satisfactory condition, with only minor areas of abrasion damage and deterioration observed.
Marina Utilities	53, 54, 55, 56, 57	Fair	Fire water systems were not visible other than the fire department connections at the piers and some hose cabinets. Fire department connections and fire water piping from the piers to the floats appear in fair condition overall. Fire hose cabinets are in fair to poor condition. Potable water on the floats was not visible other than the utility hangers and the associated hose bibs. Observed portions of the potable water indicate the system is in fair condition overall with the hose bibs and piping in satisfactory condition and the galvanized steel utility hangers in fair condition with significant rusting and deterioration observed. According to available record drawings (1984), water lines are 3-inch PVC on piers and gangways, 2-1/2-inch PVC on Floats B through G, and 2-inch PVC on the fuel and guest floats. A sanitary sewer pumpout system is installed on the Fuel Float. According to available record drawings (1984), there is a 2-inch pressure line for the pumpout. The pumpout system was not visible, but based on age and record drawings is likely in satisfactory to fair condition.

Table 1. Condition of Dock Facilities.

Item	Photo	Rating	Existing Condition
			Fuel lines were installed on the Fuel Float. According to the available record drawings (1984), there are 2-inch galvanized steel pipes for fuel installed and connected to the FRP fuel tanks (gas and diesel). This buried system was not visible, but based on age and record drawings is likely in satisfactory to fair condition. The fuel tanks have a leak detection monitoring system that was installed in 2005. The marina currently hires a testing company (SME Solutions) to perform pressure testing of the piping for leakage annually as well as an annual test of the leak detection monitoring system. A copy of the 2018 test is included in Appendix F. A waste oil tank (steel, about 35 years old) located in the maintenance building was also in satisfactory to fair condition.
Riprap Breakwater	58, 59	Satisfactory	The riprap breakwater surrounding the marina is in satisfactory condition overall with no significant issues observed.
Guardrail	60, 61	Fair	The timber guardrail is in fair condition overall with moderate deterioration of the timber members. Approximately 25 percent of the timbers are damaged.
Upland Utilities	62	Satisfactory to Fair	Fire water services upland were not visible other than the fire hydrants, which appear in satisfactory condition. According to available record drawings, an 8-inch ductile iron water line was installed in 1984. Based on age, it is likely in satisfactory to fair condition. Potable water services upland were not visible. According to available record drawings, a 3-inch PVC water line was installed in 1984. Based on age, it is likely in fair condition. Sanitary sewer utilities upland were not visible. According to available record drawings, a 6-inch line, septic tanks, and lift station and pump to the drain field were installed in 1984. Based on age, the

Table 1. Condition of Dock Facilities.

Item	Photo	Rating	Existing Condition
			sewer system is likely in satisfactory to fair condition. According to available record drawings, a waste oil collection system was installed near the southeast corner of the marina in 1991. This system was not visible other than the disposal sink, and based on age it is likely in satisfactory to fair condition. The upland stormwater system consists of catch basins within the paved parking area that pipe directly out to Puget Sound. According to the marina harbormaster, the stormwater for the south parking lot area flows to a drain field prior to discharging to Puget Sound. There are currently no stormwater quality treatment systems for the stormwater runoff from the paved parking areas.
Site Paving and ADA accessibility	63, 64, 65, 66	Fair	The parking lots were paved in approximately the mid to late 1980s. According to the record drawings, pavement thickness is only approximately 2 inches. The pavement is all asphalt, and it is in fair condition overall with cracking observed throughout. Pavement markings (parking stall striping) are also significantly deteriorated. The sidewalks are all concrete and are assumed to have been installed at the same time as the asphalt pavement. Sidewalks are in satisfactory condition overall. ADA accessibility to the marina appears to be satisfactory except for the gangways down to the docks, which likely do not meet ADA requirements regarding maximum allowable slope. Overall access from parking to restrooms, buildings, floats, and the boat launch facilities appears to be acceptable.
Environmental Concerns		N/A	There were no major environmental concerns noted during the site observation visit. The existing creek and discharge point are outside the breakwater and

Table 1. Condition of Dock Facilities.

Item	Photo	Rating	Existing Condition
			should not be affected by any work within the marina. A spill containment kit should be located on the fuel dock. Also, since the timber piles are creosote, care should be taken when working with or replacing float and pier elements to prevent creosote release into the water.

ANALYSIS – DOCK FACILITIES (DOCKS & DIVING)

Review of Background Information

Based on conversations with Marina staff, ongoing maintenance has been performed on the piers, gangways, float systems, boat launch, and associated upland parking lot and utilities, but no substantial reconstruction has been done since the systems were initially installed in the 1980s and 1990s. Regular maintenance has consisted of standard float, ramp, and pier maintenance, including component replacement and patching and sealing as needed.

Also based on conversations with the Port of Port Angeles Marina staff, the only dredging that was done for the marina was part of the original construction, and no maintenance dredging has been done within the marina since. To date there are no water depth or dredging issues as a result of navigation control and observation by the Port. Marina staff have monitored water depths in the marina over the past 20 years and found no significant changes in depth (bathymetry). The average water depth along Floats "B" and "C" has been approximately -8 feet (MMLW) since the floats were installed. This area is shallow for the larger boats at low tide, but this is not a result of sedimentation over time. Overall, the effect of sedimentation within the marina basin is minimal.

The majority of the previous design drawings for the marina were made available and were reviewed. These drawings confirmed sizes and marina elements and confirm that the marina elements are all 25 or more years old.

Recommended Repairs – High Priority

The marina and upland civil systems have been well maintained but are showing their age (25+ years). There are several high-priority repairs recommended where elements have failed or have significant deterioration and are no longer functional. These elements are detailed in the table below along with recommendation for repair, probable construction cost, and recommended repair timeline.

Table 2. Dock Facilities Recommended Repairs - High Priority.

Structure/Items	Recommendation	Probable Construction Cost	Recommended Timeline
Plastic Pile B-1 with major cracking	Replace plastic pile with new galvanized steel pipe pile.	$10,000	Within 2 years
Rusted Pile Hoops (multiple locations)	Replace pile hoops with new pile hoops with rub strips/rollers. Approx. 10 total pile hoops.	$5,000	Immediate

Table 2. Dock Facilities Recommended Repairs - High Priority.

Structure/Items	Recommendation	Probable Construction Cost	Recommended Timeline
Corroded Steel Piles at Fuel Float (F5, F6)	Replace with new galvanized steel pipe piles (same diameter).	$20,000	Immediate
Damaged Gangway Wheel (G-H Float)	Replace gangway wheel assembly including rollers	$1,000	Within 1 year
Broken Cleat (Guest Float)	Replace with same model cleat.	$200	Within 1 year

Recommended Repairs – Medium Priority

The medium priority recommended repairs are elements that should be repaired or replaced within the next five years due to existing and expected additional deterioration. These elements are detailed in the table below along with recommendation for repair, probable construction cost, and recommended repair timeline.

Table 3. Dock Facilities Recommended Repairs - Medium Priority.

Structure/Items	Recommendation	Probable Construction Cost	Recommended Timeline
Timber Guardrail Replacement	Replace timber guardrail with new metal guardrail. Approx. 1,000 feet of timber guardrail.	$140,000	2-3 years
Pier Railing Repairs	Repair timber pier railings including replacement of damaged boards, cleaning, and new paint (approx. 150 feet)	$21,000	3-5 years
Gangway Repairs	Temporarily remove gangways (5), remove rust and repair galvanizing, remove decking and rusted grating and replace with new grated decking.	$50,000	1-2 years
2x8 Rub Board Replacement	Remove damaged rub boards and replace with new timber rub boards (same dimensions). Approx. 15,000 feet of rub boards to be replaced.	$150,000	3-5 years
Damaged Float Tri-Frame Replacement	Remove damaged concrete float tri-frame and replace with new concrete tri-frame or grating. Approx. 50	$25,000	5 years

Table 3. Dock Facilities Recommended Repairs - Medium Priority.

Structure/Items	Recommendation	Probable Construction Cost	Recommended Timeline
	(~25%) tri-frames to be replaced throughout marina.		
Sewer Pumpout Replacement	Sewer pumpout system is approaching the end of its expected life. Remove existing and replace with new pumpout system including piping.	$50,000	2-4 years
Utility Hanger Replacement	Replace rusted existing utility hangers throughout marina. Assume hangers at 10 feet o.c. on walkway floats (~350).	$87,500	3-5 years
Asphalt Pavement Replacement	Replace deteriorated existing 2-inch-thick pavement with new 3-inch-thick pavement. See Appendix F for detailed cost estimate.	$755,000	5 years
Boat Launch Concrete Ramp Repairs	Repair cracks and spalls in existing boat launch ramp concrete.	$15,000	1-2 years

Recommended Repairs – Low Priority

The low priority recommended repairs are mainly elements that will be at the end of the useful life and should be replaced within the next 20 years due to expected additional deterioration. These elements are detailed in the table below along with recommendation for repair, probable construction cost, and recommended repair timeline.

Table 4. Dock Facilities Recommended Repairs - Low Priority.

Structure/Items	Recommendation	Probable Construction Cost	Recommended Timeline
Replace Piers (including utilities)	Remove and replace pier and gate structures with new piles and structures (5 locations @ ~150 sf)	$300,000	10-15 years
Replace Gangways (including utilities)	Remove and replace gangways with new aluminum gangways (5).	$250,000	10-15 years
Replace all Moorage Floats (B-G), Fuel Float, and Guest Float (including utilities)	Replace floats with new concrete floats and new galvanized steel piles. See Appendix F for detailed cost estimate.	$11,000,000	15 years

Table 4. Dock Facilities Recommended Repairs - Low Priority.

Structure/Items	Recommendation	Probable Construction Cost	Recommended Timeline
Replace Concrete Boat Launch Ramp	Remove existing concrete launch ramp and install new (~ 10,000 sf)	$500,000	10 years
Replace Boat Launch Floats	Remove and install new steel framed polyethylene tub floats and new galvanized steel piles (~1500 sf and 4 piles)	$200,000	10 years
Replace 3" Potable Water Upland	Remove or abandon existing potable water line and install new (~1500 feet).	$50,000	10-15 years
Update/Replace Sanitary Sewer System & Tie-In to City Sewer System	Sewer tie to City system (Cost per Port of PA report).	$480,000	10 years
Breakwater Riprap Repairs	Repair loose or missing armor rock. See Appendix F for detailed cost estimate.	$150,000	20 years
Replace Fuel Tanks and Piping	Remove the existing tanks and piping and install new double-wall containment tanks and piping and associated monitoring equipment.	$150,000	15 years

Total Construction Cost – Capital Improvement/Maintenance: $14,410,000

Note that construction cost includes mobilization/demobilization, contractor general conditions, and contractor overhead and profit but does not include any escalations, contingencies, sales tax, permitting, engineering, etc. Cost estimate methodology is based on a 25-year design life for timber members and a 50-year design life for concrete and steel members, with the assumption of proper maintenance. Once members reach the end of their design life, they typically need to be replaced rather than undergo further repairs and maintenance. Estimated construction costs are based on RS Means, bid tab results from recent projects, and correspondence with suppliers, manufacturers, and contractors.

Remaining Useful Service Life

Typically, timber structures and floats along the waterfront are assumed to have an approximately 25-year useful service life, and concrete structures and floats are assumed to have an approximately 50-year useful service life. The useful service life can be exceeded if the systems are not subject to mechanical damage, biological deterioration, or overloading. The existing piers, floats, piles, and

boat launch are approximately 17 to 34 years old and still have some useful service life remaining due to their protected location and the continued maintenance that has been performed.

The upland site elements including pavement, sidewalks, and utilities are assumed to have an approximately 25 to 50 year useful service life as long as they are not subject to overloading or mechanical damage. The existing upland site elements are approximately 30 years old and have some useful service life remaining.

Given the overall age of the marina elements, ongoing maintenance requirements are expected to increase significantly as more of the components age and require replacement. A summary of the remaining useful service life for the marina elements is provided below. Note that the estimate of service life remaining assumes continued proper maintenance and repair of the systems.

Table 5. Dock Facilities - Service Life Remaining.

Item	Service Life Remaining
Fixed Pier Floats B-D, Gangway, Gate Structure	10-15 years
Fixed Pier Floats E & F, Gangway, Gate Structure	10-15 years
Fixed Pier Floats G & H, Gangway, Gate Structure	10-15 years
Fixed Pier Piles	25 years
Float B-D Walkway, Float B, Float C, Float D	15 years
Floats B-D, B, C, & D Piles	25 years
Float E-F Walkway, Float E, Float F	15 years
Floats E-F, E, & F Piles	25 years
Float G-H Walkway, Float G, Float H	15 years
Floats G-H, G, & H, and Piles	25 years
Guest Float Pier, Gangway, Float, and Piles	15-20 years
Fuel Float Pier, Gangway, Float, and Piles	15-20 years
Boat Launch Concrete Ramp, Float, and Piles	5-10 years
Marina Utilities	5 years
Riprap Breakwater	30-50 years
Guard Rail	5 years
Upland Utilities	10-20 years
Site Paving	5 years

Repairs to replace substantial float and pier components, such as concrete float modules, walers, thru-rods, utilities, and pile hoops, stringers, decking, etc., could extend the life of the system. However, it is likely that the maintenance and component replacement costs will not be economical beyond 15 years, and replacement of the float and pier systems may be preferred over substantial repairs. The piles were noted to have mainly abrasion damage and are anticipated to outlive the existing float system.

Ongoing Maintenance Recommendations

Periodic inspections should be performed in accordance with the ASCE MOP 130-2015, *Waterfront Facilities Inspection and Assessment*, which recommends another routine inspection in approximately four years, given the deterioration observed.

CONDITION ASSESSMENT – ELECTRICAL (MARINA)

Electrical Information

This assessment includes power and lighting systems on the fixed piers, gangways, and floats. The power and lighting systems are substantially the same as the original installation that was done in 1984 and expanded a few years later. The original design was based on 20-amp, 120-volt shore power connections for each slip (common practice for pre-1990 construction). The power and lighting configuration are broadly the same for each dock and consists of shore power pedestals, pole mounted luminaires, in-float wiring, dock-to-shore wiring transitions, and upland distribution and service panels.

This report notes deficiencies as observed. This report, however, does not represent a complete or comprehensive list of all deficiencies that exist in the marina. The observations were visual in nature; panels and boxes were opened to for visual inspection of the interiors. Electrical testing was not a part of this effort.

Table 6. Condition of Electrical (Marina).

Item	Photo	Rating	Existing Condition
Shore Power Pedestals	EM1	Fair	Shore Power: Shore power is provided by pre-assembled SeaTech shore power heads mounted on pressure treated timber posts. Pedestals are roughly centered between the finger floats. With a few exceptions, most pedestals serve two slips; each with 30-amp, 120-volt twist lock receptacles. Pedestals are equipped with metering hardware including a non-resettable usage counter for each slip. The shore power pedestals have been changed since the original construction. General condition of shore power pedestals is fair.
Pole Mounted Luminaires	EM2	Poor	Dock Lighting: Dock lighting is provided by 70-watt high-intensity discharge (HID) luminaires mounted to pressure-treated timber posts. Mounting height is approximately 10 feet. Spacing between pole-mounted luminaires is between 50 and 70 feet. Luminaires are supplied via the nearest shore power circuit. The luminaires serving the marina floats have reached the end of their service life. Lenses are

Table 6. Condition of Electrical (Marina).

Item	Photo	Rating	Existing Condition
			commonly obscured; watertight integrity of the luminaires is in question; corrosion is observed on the exterior housings. Surface wiring on poles appears serviceable; however, steel fasteners are corroding. Timber posts are in very good condition. HID dock lighting is operationally obsolete. Maintenance and energy costs, if it is not currently, will soon rise to exceed the value of replacement with new LED lighting system. Further, the diminished performance of the luminaire may result in substandard illuminance of the walking surfaces and cause an unsafe condition for users.
In-float Wiring	EM3	Fair	Dock wiring is installed in internal chases inside the floating concrete dock. Flush mounted junction boxes along the length of the dock provide access to the internal chases. PVC conduit and type THW wire is installed inside the dock chases. Tap conductors to the shore power heads are spliced off the feeder using epoxy splice kits. The original (#12) tap conductors have been replaced with #10 wire to accommodate 30-amp outlets. Wiring is in reasonably good condition for its age. No cracking of the insulation was noted in sampled locations. It is important to note that visual inspection cannot detect a breakdown of insulation. Ageing systems must be tested to ensure safe operation.
Dock-to-Shore Wiring Transitions	EM4	Fair	Electrical feeders from shore to the floating docks are installed below the gangway. Portable power cable (Type G) is used to provide flexible connections between the shore, gangways, and floating docks. The portable power cable spans between a junction boxes on mounted to the underside of the gangways to box mounted to the top of the dock and below the approach pier.

Table 6. Condition of Electrical (Marina).

Item	Photo	Rating	Existing Condition
			These connections are in good condition. Minor repairs and re-securing of wiring/raceway will be necessary soon.
Upland Distribution/ Service Panels	EM5	Good	The source of the electrical power for each dock or in this case, each gate (group of docks), originates at distribution panels on the upland side of each gatehouse. Each service provides at 800-amps, 120/240-volt, single phase. Circuits and feeders from these panels supply two circuits on each dock; on for the north side pedestals and another for the south side. The stainless-steel service panels are manufactured by Skyline Electric in Seattle. Each panel contains a meter, CT enclosure, and distribution panel (with a main breaker). Enclosures are in very good condition with some minor exterior discoloration and internal corrosion. Interiors are dry. Main circuit breakers are Westinghouse Selectronic with adjustable plugs. Breakers should be cycled and wiring terminations checked for tightness. Torque to manufacturers recommended values.

ANALYSIS – ELECTRICAL (MARINA)

Review of Background Information (Electrical)

Electrical distribution and lighting systems at the marina have been well maintained and are in fair condition based on age. Wiring methods and products are commonly used in similar installations across the state. Annual maintenance plans, as recommended by NFPA 303, should be implemented. Because shock hazards and fire most often occur in areas that cannot be detected by visual observation, testing of the electrical feeders and circuit breakers is recommended. Failure in a circuit could result in fire or injury; further, repair of a failure may involve significant upgrade costs for a dock – see the following explanation.

The National Electrical Code has undergone ten or more cyclical updates since construction. As such, the marina is not compliant with many aspects of the 2017 or 2020 edition - nor the corresponding Washington Administrative Code (WAC) revisions. The WAC does not provide for 'grandfathering' of installations based on code at the time of installation. Neither does it require changing an installation with each code cycle. The WAC requires upgrades to electrical system when an existing condition is considered dangerous to the public or property; or when upgrading or rebuilding. There were no dangerous conditions observed at the marina during this investigation, however, due to the age of this installation, any changes that an owner would make to the electrical system would trigger a set of new requirements that will necessitate major upgrades to the existing system.

Recommended Repairs – High Priority

None.

Recommended Repairs – Medium Priority

Table 7. Electrical (Marina) Recommended Repairs - Medium Priority.

Structure/Items	Recommendation	Probable Construction Cost
Feeders and Connections	Engage a testing agency to verify the integrity of feeder insulation. Feeder insulation will begin to lose its effectiveness over time; particularly in systems over 30 years old. Portable power cable in water begin to fail after 20 years.	$15,000
Replace HID Dock lighting with LED	Replace existing luminaires with new LED heads (reuse existing wood poles).	$75,000

Recommended Repairs – Low Priority

Table 8. Electrical (Marina) Recommended Repairs - Low Priority.

Structure/Items	Recommendation	Probable Construction Cost
Electrical & Lighting Distribution System Replacement	Electrical system replacement should take place in the next 10 to 15 years. The existing configuration would support a phased upgrade if done by gatehouse.	$1,200,000

Total Cost – Capital Improvement/Maintenance $1,290,000

Remaining Useful Service Life

Service life of electrical components overwater is generally considered to be 25 years. With extended maintenance a system can operate safely for much longer. At over 30 years it is expected that the long-term costs of maintenance and repair will begin to exceed the amortized cost of replacement.

Table 9. Electrical (Marina) Service Life Remaining.

Item	Service Life Remaining
Shore Power Pedestals	20 years.
Pole-Mounted Luminaires	0 years (operationally obsolete)
In-Float Wiring	<10 years.
Dock-to-Shore Wiring Transitions	<5 years.
Upland Distribution and Service Panels	10 years.

Ongoing Maintenance Recommendations

Comply with NFPA 303 recommended practices.

CONDITION ASSESSMENT – BUILDINGS (STRUCTURAL AND ARCHITECTURAL)

Reid Middleton performed a site visit condition assessment of the three building structures at the Marina on February 6, 2019. The building structures include the Administration Building, the Remote Restroom Building, and the Maintenance Building. During the site visit, the existing construction was compared with the available as-built drawings to observer discrepancies. The existing construction for both the Administration (including restaurant) and Restroom buildings were generally observed to be consistent with the as-built drawings.

The condition assessment for the buildings was performed based on available record drawings and limited visual observation of the structure. No destructive testing was performed to qualify as-built conditions and to verify the quality of materials and workmanship. No other warranty is made as to the professional advice included in this report. This report provides an overview of the visual condition assessments and does not address programming and planning issues. The seismic analysis of the buildings is not included in the scope of the services and does not address the seismic deficiencies in the buildings. This report has been prepared for the exclusive use of the City of Sequim and is not intended for use by other parties, as it may not contain sufficient information for other parties' purposes or their uses.

The following observation condition ratings are used in this report:

Good	No visible damage or only minor damage is noted. No repairs are required.
Satisfactory	Limited minor to moderate deterioration was observed. No repairs are required.
Fair	Primary elements are sound, but minor to moderate defects or deterioration are observed. Repairs are recommended, but the priority of the recommended repairs is low.
Poor	Advanced deterioration is observed on widespread portions of the structure. Repairs may need to be executed with moderate urgency.
Serious	Advanced deterioration or breakage may have affected the primary structural components significantly. Local failures are possible, and repairs should be carried out on a high-priority basis.
Critical	Extremely advanced deterioration or breakage has resulted in localized failure(s) of primary structural components. More widespread failures are possible or likely to occur, and repairs should be carried out on a high-priority basis.

Table 10. Condition of Buildings.

Item/System	Photo	Rating	Existing Condition
Admin. Bldg.	1		
Gutter	2	Serious	Damage, water leaks.
Soffit	3	Serious	Significant water damage to the exterior soffit around the perimeter of the building below the main floor roof due to the faulty gutter system.
Guardrail	4, 5	Fair	The timber guardrail is in fair condition overall with moderate deterioration of the timber members and minor corrosion on steel members. Approximately 25 percent of the guardrails are damaged and need to be repaired or replaced.
Top timber rail at north stair	6	Fair	Deteriorated by fungal decay
All visible items	1, 7, 8	Satisfactory to Good	Exterior and interior walls, columns, decking, floors, beams, trusses, stairs, windows and doors with their frames, siding, roofing, louvers, ceiling, and other misc. items.
Invisible items		Satisfactory to Good (assumed)	Insulation, studs, piers, footings, framed structures, etc. – *Conditions of invisible items are assumed to be Satisfactory to Good based on the current condition of the visible items.*
Remote Restroom Bldg.	9		
All visible items	9	Good	Interior walls, floor, windows and doors with their frames, shingles, roofing, louvers, ceiling, gutters, and other misc. items.
Invisible items		Good (assumed)	Exterior CMU walls, insulation, footings, roof truss, sheathing, etc. – *Condition of invisible items are assumed to be Good based on the current condition of the visible items.*
Maint. Bldg.	10		
All visible items	10	Good	Interior walls, floor, windows and doors with their frames, shingles, roofing, louver, chain-link fence, ceiling, gutters, and other misc. items.

Table 10. Condition of Buildings.

Item/System	Photo	Rating	Existing Condition
Invisible items		Good (assumed)	Exterior walls, studs, insulation, footings, roof truss, sheathing, etc. – *Condition of invisible items are assumed to be Good based on the current condition of the visible items.*

ANALYSIS – BUILDINGS (STRUCTURAL & ARCHITECTURAL)

Review of Background Information

Administration Building

The administration building is a partial three-story building with a daylight basement, originally constructed in 1984. Upgrades to the building were performed in 1990. The upgrades to the building included expansion of deck and railing along the south and east side of the building (toward the marina) at the basement level. The expansion also appears to include the addition of new footings and piers.

The structural system of the building is a mix of cast-in-place concrete walls and wood stud walls with wood floor and roof framing construction. The building is constructed on a sloping grade with partial daylight basement. The exterior and interior concrete walls are 8 inches thick and composed of both the lateral-force-resisting systems (LFRS) of the building and the majority of the vertical-load-bearing systems at the basement level and main floor. The second partial floor and tower structure are constructed of a mix of concrete and wood stud walls over the concrete walls below. The floor framing consists of pre-manufactured truss joist spanning between glulam beams and concrete walls. The glulam beams are supported on wood posts and shallow concrete spread footings. The low roof over the main floor is constructed with 3-inch tongue and groove (T&G) decking overlain on the glulam purlins forming a hip roof. The high roof over the second floor and tower roof framings are constructed with 2x wood joist with 1/2-inch-thick plywood overlaid. Both hip roofs at the tower and a low roof over the main floor consist of metal roofing and a high roof over the second floor consists of built-up membrane roofing.

During the site visit, no significant damage to the concrete walls of wood columns was observed. Only minor hairline cracks were observed at the concrete walls that are not covered with architectural finishes. Following is a summary of the damages that were observed in the Administration building:

- Significant water damage to the exterior soffit around the perimeter of the building below the main floor roof due to the faulty gutter system.
- Several railing connections observed to have been corroded.
- A portion of the railing along the north ramp observed to have rotten wood at the top rail.
- A top rail along the north stair observed to be hollow at the end.

Remote Restroom Building

The Remote restroom building is a one-story building with a mix of wood and reinforced concrete masonry unit (CMU) construction. The exterior and interior walls are constructed of 8-inch-thick reinforced CMU walls supported on continuous concrete footings. Roof framing consists of plywood sheathing on 2x8 hip roof trusses supported by exterior CMU walls. The restroom building has metal roofing over insulation and plywood sheathing. The exterior CMU walls have wood shingles over 1/2-inch plywood, 1x4 wood furring, and insulation. The

foundation system for the building consists of reinforced concrete foundation walls on continuous strip footings under the exterior and interior CMU walls, and 4-inch-thick concrete slab-on-grade floor.

During the site visit, no significant damage to the structural or nonstructural components of the building was observed. The building appears to be in good condition.

Maintenance Building

The Maintenance building is a one-story, one room building comprised of wood construction. The exterior walls are constructed of 2x4 wood studs at 16 inches on center with cedar shingles over 1/2-inch-thick plywood on the exterior face of the wall. The roof framing consists of 1/2-inch-thick plywood overlaid over 2x wood hip trusses supported by the exterior stud walls. The building has metal roofing over the plywood sheathing. The foundation system for the building consists of reinforced concrete foundation walls on continuous strip footings under the exterior walls and 4-inch-thick concrete slab-on-grade floor.

During the site visit, no significant damage to the structural or nonstructural components of the building was observed. The building appears to be in good condition.

Recommended Repairs – High Priority

Table 11. Buildings Recommended Repair - High Priority.

Structure/Items	Recommendation	Probable Construction Cost	Recommended Timeline
Gutter System (Admin Bldg.)	Repair or replace gutter system (Qty: ~400 feet).	$4,000	Within 1 year
Exterior Soffit (Admin Bldg.)	Replace damaged wood soffit with new coated metal soffit. (Qty: ~2,500 sf)	$31,500	Within 1 year

Recommended Repairs – Medium Priority

Table 12. Buildings Recommended Repair - Medium Priority.

Structure/Items	Recommendation	Probable Construction Cost	Recommended Timeline
Top rail at north stair handrail (Admin Bldg.)	Replace damaged timber top handrail with new metal handrail at north stair.(Qty: ~24 feet)	$1,500	2-3 years
Timber Guardrail Replacement (Admin Bldg.)	Replace timber guardrail with new metal guardrail. ~1,000 feet of timber guardrail. (Qty: ~300 feet)	$42,000	2-3 years

Recommended Repairs – Low Priority

The low priority recommended repairs are mainly elements that will be at the end of their useful life and should be replaced within the next 20 years due to expected additional deterioration. With consideration of the current conditions and remaining lives of major components of the remote restroom and maintenance buildings, no low priority recommended repairs for the buildings are needed within the next 20 years.

Table 13. Buildings Recommended Repair - Low Priority.

Structure/Items	Recommendation	Probable Construction Cost	Recommended Timeline
Replacement - Siding (Admin Bldg.)	Replace existing siding with new hardie board siding. (Qty: ~2,700 SF)	$18,000	15 years
Replacement - Roofing (Admin Bldg.)	Replace existing metal with new coated galvanized metal roofing (including replacement of torch down roofing). (Qty: ~4,350 SF)	$54,000	15 years
Painting – Exterior (Admin Bldg.)	Painting with caulking	$18,000	10 years
Painting – Interior (Admin Bldg.)	Painting	$25,000	10 years

Total Cost – Capital Improvement/Maintenance $158,500

Remaining Useful Service Life

Table 14. Buildings Service Life Remaining.

Buildings	Service Life Remaining
Administration Building	20 or more years
Remote Restroom	20 or more years
Maintenance Building	20 or more years

CONDITION ASSESSMENT – ELECTRICAL (BUILDINGS)

Information

This assessment includes power, lighting, and communications systems, in the administration and restroom buildings. These systems are substantially the same as the original installation that was done in 1984. This report does not address electrical code deficiencies as they relate to current code.

This report notes conditions as observed. This report, however, does not represent a complete or comprehensive list of all deficiencies that exist in the buildings. The observations were visual in nature; panels and boxes were not opened for visual inspection of the interiors. Electrical testing was not a part of this effort.

Table 15. Condition of Electrical (Buildings).

Item	Photo	Rating	Existing Condition
Building Power System	E1	Fair	The administration building is fed from a pad-mounted transformer located on the north side of the building. An underground service extends from the transformer to an 800-amp, 120/208-volt, three phase, four wire, service distribution panel to an electrical room in the lower level of the building. Sub panels in the upstairs kitchen and mechanical room are fed from this panel. Additional subpanels are fed from Panel A (also in the electrical room). Additional services are tapped off the service feeder from the pad-mounted transformer. These services are separately metered. Submeters are provided for SBYC, bosuns locker, restaurant, and restaurant water heaters. Wiring is predominantly building wire in conduit (EMT) with set screw fittings. Branch circuits have been altered over time due to operational and tenant changes. Overall distribution system installation is consistent with commercial buildings of this age and type. Years of tenant changes have resulted in a complex interweave of branch circuits and systems. Nothing unsafe was observed during the walkthrough; however, circuits and their origins

Table 15. Condition of Electrical (Buildings).

Item	Photo	Rating	Existing Condition
			should be identified and marked to ensure that electricians working on the systems can make the system safe. The original and additional services in the electrical room should be placarded as 'Service Disconnect' so that all energized circuits within the building can be de-energized if necessary. The power system is in fair condition. Safety features, such as GFCI outlets, should be checked to ensure proper operation. Terminations should be tightened and overcurrent protection (circuit breakers) should be cycled. Ground continuity should be checked; service ground bonding should be tested. Electrical wiring in the restroom building is of the same construction type and is in comparable condition.
Building Lighting System	E2	Fair	Interior building lighting systems include various types of fluorescent luminaires. Fluorescent lay-in troffers are installed in T-bar ceilings, fluorescent fixtures with wrap-around lenses are used on hard (gypsum) ceilings, and open tube fluorescent strip lights are provided in utility spaces. Emergency exit signs and emergency battery powered lighting is provided in corridors and stairwells. Proper operation and coverage should be tested during annual maintenance. Exterior lighting is comprised of HID wall packs and low-bay HID fixtures in the covered corridor. Exterior wall packs are non-cutoff type flood lights. Lighting system fixture types and performance is not ideal, but commensurate with buildings of similar age. Fixture or lamp replacement with LED sources would improve performance and lower energy costs. Occupancy sensors and

Table 15. Condition of Electrical (Buildings).

Item	Photo	Rating	Existing Condition
			daylighting controls would also help conserve energy.
Building Comm. Systems	E3, E4	Good	The administration building was constructed before the widespread use of computer and data systems. The building is not provided with spaces for installing data cabling and equipment. T-bar ceilings provide some access through the spaces, but concrete construction and hard-lid construction limits access in some areas. Because of these constraints, data equipment and wiring are installed in disorganized fashion. Antennas, cameras, and other communication equipment appear to be in good condition. Weighted system for securing roof mounted antennas should be reviewed for roof loading.
Building Fire Alarm System			The building does not have an automatic fire alarm system.

ANALYSIS – ELECTRICAL (BUILDINGS)

Recommended Repairs – High Priority

Table 16. Electrical (Buildings) Recommended Repair - High Priority.

Structure/Items	Recommendation	Probable Construction Cost
Fire Alarm System	Provide automatic fire alarm system for the building. Requirements for the marina should be reviewed with the local fire marshal.	$50,000

Recommended Repairs – Medium Priority

Table 17. Electrical (Buildings) Recommended Repair - Medium Priority.

Structure/Items	Recommendation	Probable Construction Cost
Update Building Lighting System	Replace existing luminaires and/or lamps with LED sources.	$40,000 $10,000 (lamps only)

Recommended Repairs – Low Priority

None.

Total Cost – Capital Improvement/Maintenance $100,000

Remaining Useful Service Life

Table 18. Electrical (Buildings) Service Life Remaining.

Item	Service Life Remaining
Building Power System	20 or more years
Building Lighting System	10 years
Building Communication System	20 or more years

CONDITION ASSESSMENT – MECHANICAL (BUILDINGS)

The mechanical conditional assessment of the marina facilities included the primary original Harbormaster's building, restaurant addition, and the stand-alone restroom building. The original Administration building was constructed in 1984, with additions and or retrofits occurring in 1989, 1990, and 2008 along with mechanical equipment upgrades and replacements since 2009 continuing through the summer of 2018.

Within the Harbormaster building, each of the three floor areas (zones), was reviewed by way of minimally invasive physical access to each space/system in conjunction with existing documentation, specifications, and drawings, as available. Visual observations, including multiple photos, were taken to clarify the current operational conditions, items in need of repair and or replacement and to note items not in conformance with current adopted codes and or standards.

Regarding the stand-alone restroom building, also constructed in 1989, all the original construction and mechanical equipment is still in place. Again, physical access with visual record comprised the effort in assessing the existing conditions.

Site observation for all mechanical related items shall be considered as Level 1, a visual inspection focusing on items considered damaged, deteriorating, and or non-functional by way of operation. No invasive procedures were used in providing conditional assessment of the mechanical equipment and or systems.

The general condition of mechanical equipment and systems noting damage conditions observed are discussed below. Photos of each element are included in the appendices. With respect to the structural report format above, the mechanical followed the same observation condition ratings as noted below:

Good	No visible damage or only minor damage is noted. No repairs are required.
Satisfactory	Limited minor to moderate deterioration was observed. No repairs are required.
Fair	Primary elements are sound, but minor to moderate defects or deterioration are observed. Repairs are recommended, but the priority of the recommended repairs is low.
Poor	Advanced deterioration is observed on widespread portions of the mechanical system and or equipment. Repairs may need to be executed with moderate urgency.
Serious	Advanced deterioration, leaks, or inoperable equipment/controls may have affected the primary mechanical components significantly. Local failures are possible, and repairs should be carried out on a high-priority basis.
Critical	Extremely advanced deterioration, leaks, abandoned equipment and lack of electronic control of the existing equipment has resulted in localized failure(s) of

primary mechanical components. More widespread failures are possible or likely to occur, and repairs should be carried out on a high-priority basis.

Table 19. Condition of Mechanical Systems & Equipment.

Item/System	Photo	Rating	Existing Condition
Harbormaster Building			
HP-1	1 & 2	Good	Split-system heat pump. Indoor unit replaced in 2016, unit in good condition. The outdoor unit is original and in satisfactory condition. System serves the main floor level, primarily the meeting room, and some ancillary spaces.
HP-2	3 & 4	Fair	Split-system heat pump. Indoor/outdoor units are of the original installation and are in fair condition but at the end of their functional life. System serves the Yacht Club, located within the main floor level.
HP-3	5 & 6	Fair	Split-system heat pump. Indoor/outdoor units are of the original installation and are in fair condition but have been abandoned in place as a different system type was provided in 2016. System serves the Harbormaster's Office, located on the upper floor level. System is in fair condition, but no longer in operation.
F-1	7	Fair	Furnace with electric heat. Unit was replaced in 2008 and is in good condition. System serves basement spaces.
Ductwork	8, 9, 19, 11 & 12	Satisfactory	All the supply, return, exhaust, and outside air ductwork is original along with all the corresponding grilles, registers, and diffusers and all are in satisfactory condition.
Controls	13, 14 & 15	Satisfactory	Primarily, each heat pump and furnace system are controlled via a wall mounted 7-day programmable thermostat. Each zone can be set to custom parameters manually and the overall condition is satisfactory with the exception of controls serving the heat exchanger assembly. The mini-split systems are equipped with remote thermostats and are in good condition and the packaged wall heat pumps are equipped with integral thermostats, all in good condition.

Table 19. Condition of Mechanical Systems & Equipment.

Item/System	Photo	Rating	Existing Condition
WP-HP-1	16	Fair	Wall packaged heat pump. Unit serves the tower and is in fair condition.
WP-HP-2	17	Good	Wall packaged heat pump. Unit serves the Pelican Bar, replaced in 2008 and is in good condition.
HX-1/EF-1	18, 19 & 20	Poor	Heat exchanger/exhaust fan. Assembly is original and not functioning as designed. Associated control dampers are non-operable and can only be adjusted manually.
EF-2	21	Satisfactory	Exhaust fan serves Type 1 hood located within kitchen space associated with the Meeting Room. Original installation/fan assembly abandoned in place. New exhaust fan and associated ductwork provided in 2009, system in satisfactory condition.
EF-3	22	Satisfactory	Exhaust fan serves men's restroom, Main floor level, original installation, satisfactory condition.
EF-4	N/A	Satisfactory	Exhaust fan serves women's restroom, main floor level, original installation, satisfactory condition.
Mini-Split System "A"	23	Good	Split-system heat pump assembly with indoor wall hung unit and outdoor inverter unit. System replaced HP-3, Harbormaster Office, in 2016 and is in good condition.
Mini-Split System "B"	24 & 25	Good	Split-system heat pump assembly with indoor wall hung unit and outdoor inverter unit. Original mini-split system provided under restaurant construction in 2008, system was replaced in 2016 and is in good condition.
DWH-1A/1B	26 & 27	Fair	Dual domestic water heater assembly. The original single domestic water heater was replaced with the dual arrangement in 1999. Numerous modifications have occurred over the years and current operation and control is Fair. The expansion tank and circulating pumps do not appear to have been sized properly, affecting overall system efficiency.
DWH-2	28	Good	Domestic water heater assembly. The original water heater was replaced with an instantaneous electric water heater in 2008. Assembly serves

Table 19. Condition of Mechanical Systems & Equipment.

Item/System	Photo	Rating	Existing Condition
			Upper Level Harbormaster Office restroom and is in good condition
Plumbing System – Piping	29, 30, 31, 32 & 33	Fair	Overall, the domestic sanitary, vent and potable water service piping is in fair condition. Piping is missing insulation in many locations and there appears to be a lack of dielectric unions throughout. The piping system as a whole has been modified, repaired, capped, and or abandoned in several areas throughout the building with little to no documentation as to where the above occurred. Overall, the piping systems are in fair condition.
Plumbing Fixtures - Restrooms	34, 35, 36, 37 & 38	Good	Without exception, the lion share of the fixtures are original and in good condition. Minor blemishes, chips, and mismatched handles constitute the majority of the issues and overall, the plumbing fixtures are in good condition.
MUA-1	39 & 40	Good	Make-up air unit, provided in 2018, serves the restaurant Kitchen and corresponding Type I hood. System is in good condition.
EF-K1	41	Good	Type I exhaust fan provided in 2008 under the restaurant construction. Fan is in good condition and interlocked controls with hood and make-up air unit are in good condition.
Restroom Building			
F-2	42	Poor	Electric furnace, original construction, unit approaching end of life expectancy.
EF-5	43	Satisfactory	Exhaust fan serves women's restroom, original installation, satisfactory condition.
EF-6	N/A	Satisfactory	Exhaust fan serves men's restroom, original installation, satisfactory condition.
EF-7	44	Satisfactory	Exhaust fan serves waste disposal room, original installation, satisfactory condition.

ANALYSIS – MECHANICAL (BUILDINGS)

Review of Background Information

To understand the numerous additions, replacements, and or repairs to the various mechanical systems within the primary building, Sazan reviewed all the provided documentation, including drawings from previous construction efforts and project specifications. In addition, numerous conversations with the current Harbormaster provided specific details as to why and when mechanical equipment was replaced and or provided under new construction. It is important to note that the majority of the mechanical system upgrades over the years have not been documented by way of updated record or as-built drawings and as such, the following items are not necessarily in chronological order by way of installation date.

The general condition of mechanical equipment and systems noting damage conditions observed are discussed below. Photos of each element are included in the appendices. With respect to the structural report format above, the mechanical followed the same observation condition ratings as noted below:

Recommended Repairs – High Priority

Table 20. Mechanical (Buildings) Recommended Repairs - High Priority.

Mechanical/Items	Recommendation	Probable Construction Cost
F-2	Replace original with new and upgrade controls.	$8,000
HX/EF-1	Replace system with new and upgrade controls.	$10,000

Recommended Repairs – Medium Priority

Table 21. Mechanical (Buildings) Recommended Repairs - Medium Priority.

Mechanical/Items	Recommendation	Probable Construction Cost
HP-2	Replace original indoor and outdoor units with new, interlock with heat exchanger assembly, replace refrigerant piping, and upgrade controls.	$20,000
WP-HP-1	Replace original unit with new mini-split system.	$10,000

Recommended Repairs – Low Priority

Table 22. Mechanical (Buildings) Recommended Repairs - Low Priority.

Mechanical/Items	Recommendation	Probable Construction Cost
HP-1	Replace original indoor and outdoor units with new, interlock with heat exchanger assembly, replace refrigerant piping and upgrade controls	$20,000
F-1	Replace original with new, interlock with heat exchanger assembly and upgrade controls.	$9,000
WP-HP-2	Replace original unit with new mini-split system.	$10,000
EF-K1	Replace original unit with new.	$5,000
EF-2	Replace original unit with new.	$1,000
EF-3	Replace original unit with new.	$1,000
EF-4	Replace original unit with new.	$1,000
EF-5	Replace original unit with new.	$1,000
EF-6	Replace original unit with new.	$1,000
EF-7	Replace original unit with new.	$1,000
Mini-Split "A"	Replace original system with new.	$10,000
Mini-Split "B"	Replace original system with new.	$10,000
MUA-1	Replace original system with new.	$10,000
DWH-1A/1B	Replace original system including expansion tank, circulating pumps, and controls upgrade.	$20,000
DWH-2	Replace original unit with new.	$3,000
Plumbing Systems	Selective demolition and new piping to occur at each fixture replacement. Showers drains shall be adjusted as current location does not allow for wheelchair (ADA) access. (39 locations @ $2100 each)	$82,000
Plumbing Fixtures	Selective, not all to occur concurrently, average fixture cost. (39 locations @ $1250 each)	$49,000

Total Cost – Capital Improvement/Maintenance $282,000

Remaining Useful Service Life

Table 23. Mechanical (Buildings) Service Life Remaining.

Item	Service Life Remaining
(Harbormaster Building)	
HP-1	15 years
HP-2	1-2 years
HP-3	Abandoned. Remove equipment.
F-1	10 years
WP-HP-1	2 years
WP-HP-2	5 years
HX/EF-1	None
EF-2	10 years
EF-3	5 years
EF-4	5 years
Mini-split "A"	13 years
Mini-split "B"	13 years
DWH-1A/1B	10 years
DWH-2	10 years
Plumbing Systems	5-10 years
Plumbing Fixtures	5-10 years
MUA-1	15 years
EF-K1	7 years
(Restroom Building)	
F-2	1 year
EF-5	5 years
EF-6	5 years
EF-7	5 years

CONCLUSION

The fixed piers, floats, concrete boat launch, and upland pavement surfaces and utilities are more than 30 years old and approaching the end of their useful service life. The fixed piers and gangways have approximately 10 to 15 years of useful service life remaining, while the concrete floats, concrete boat launch ramps, and associated appurtenances have approximately 15 years of useful service life remaining. The marina utilities have approximately 5 years of useful service life remaining. The various types of piles throughout the marina have up to approximately 25 years of useful service life remaining. The upland guard rail and site pavements have approximately 5 years of useful service life remaining while the upland utilities could have 10 to 20 years remaining. These estimates are based on the assumption that the continued proper repairs and maintenance of all system components will be performed. Overall deterioration is expected to accelerate given the age of the systems.

It is recommended that the pier and float systems as well as the boat launch and upland parking lot continue to be repaired and maintained and that planning begins for replacement of the float and pier systems and site pavements in the future, with the eventual replacement of the upland utilities as well.

No significant damage to the structural or nonstructural components of the administration building was observed except for the guardrail, handrail, soffit, and gutters. The building appears to be in satisfactory to good condition with 20 or more years of remaining service life. The small remote restroom and maintenance buildings have no significant observed damage and/or deterioration. They are in good condition with 20 or more years of remaining service life.

The marina electrical system is in fair condition for its age and time in service. In all, it is in equal or better condition than most comparable marinas systems constructed around the same time. More recent replacement of the shore power pedestals has helped extend the operational life of the system. That said, even with good maintenance, the slow degradation of the wiring within the float is unavoidable. In a marine environment cable insulation begins to fail after 30-years of service (20-years for submerged cables). This means that testing of the existing electrical system should take place as soon as possible and full replacement planned in the next 10 to 15 years. Due to age and code changes since construction, any replacement projects will need to be done by gate and will require service equipment changes to meet current Washington Administrative Code requirements. Replacement of the existing dock lights will provide immediate benefits in both energy savings and improved illumination levels.

Building electrical systems are in fair condition. Conditions observed are typical for buildings of this age and construction type. Construction materials and type are suitable for interior distribution. Electrical service sizes are adequate for the usage and square footage involved; though additional restaurant operations should be reviewed carefully prior to installation. The administration building does not contain an automatic fire alarm reporting system. Lighting systems are outdated and inefficient. The building would benefit from a lighting system upgrade to LED fixtures.

The mechanical systems, primarily plumbing, HVAC, and HVAC controls, for the Harbormaster and stand-alone restroom buildings are a hodge-podge of varying manufacturer's, system types,

controls, age, usability, and life expectancy. Little to no documentation is available on the equipment that is 10 years and older. The majority of the equipment, piping, and or fixtures will need to be replaced within the next 10 years with a portion of the items reaching their useful life within the next 5 years. It is important to note that with the current mechanical, plumbing, building, and energy codes, any new work will be required to conform to these codes along with the equipment selections meeting published criteria, again conforming to current requirements and regulations.

It is important to note that no dedicated fire protection system exists for the site other than local suppression systems for the Type I hoods. Future remodels, retrofits, and or additions may require the installation of a dedicated fire protection system per the authority having jurisdiction or the Fire Marshall should they not be the same.

Table 24. Project Summary.

Priorities - Improvement/Maintenance	Marina and Parking Lot	Building Maintenance and Improvements	Subtotal
High Priority (Immediate)	$36,200	$103,500	$139,700
Medium Priority (within 5 years)	$1,383,500	$123,500	$1,507,000
Low Priority (within 20 years)	$14,280,000	$349,000	$14,629,000
Total - Capital Improvement/Maintenance	$15,700,000	$576,000	$16,275,000

Total Capital Improvements 2019-2039: $16,275,000

Note: Construction cost includes mobilization/demobilization, contractor general conditions, and contractor overhead & profit, but does not include any escalations, contingencies, sales tax, permitting, engineering, etc.

APPENDICES

APPENDIX A: ECHELON DIVE REPORT

ECHELON ENGINEERING, INC.

Civil/Marine Consulting Engineers

Sample Inspection of Float Anchor Piles and Floats John Wayne Marina Sequim, WA

Prepared For:

Reid Middleton, Inc.
728 – 134th Street SW
Everett, WA 98204

ATTN: Mr. Willy Ahn, PE, Ph.D, LEED, AP
Project Manager / Sr. Engineer
Tel: 425 / 741.3800

Prepared By:

Echelon Engineering, Inc.
21027 61st Avenue West
Lynnwood, WA 98036

ATTN: Ms. Shelley Sommerfeld, PE
President
Tel: 425 / 672.8924

February 2016
18-2554

Echelon
Engineering

Civil / Marine
Consulting Engineers

February 22, 2019

Reid Middleton, Inc.
728 – 134th Street SW
Everett, Washington 98204

ATTN: Mr. Willy Ahn, PE, Ph.D, LEED, AP
Project Manager / Sr. Engineer

RE: Sample Inspection of Float Anchor Piles and Floats, John Wayne Marina, Sequim, Washington

Dear Mr. Ahn:

This letter is submitted to document the findings of our recent two day on-site effort to conduct underwater inspection of a representative sample of the float anchor piling and the associated floats within the John Wayne Marina located in Sequim, Washington. The field effort also included underwater visual inspection of the rip rap Breakwater that protects the marina. The inspection was carried out in support of your overall assessment and maintenance planning for the facility.

INTRODUCTION

The John Wayne Marina is located at Pitship Point in Sequim Bay. The marina was constructed in 1985 on land donated by the estate of the actor John Wayne. The marina is located within a horseshoe shaped rubble mound rip rap breakwater. The marina facilities include various marina service buildings, a guest float, fuel float, and boat launch facility, as well as various mooring floats. Refer to Photo No. 1. The mooring floats are identified alphabetically B – H, and are constructed of individual concrete pontoons secured together by timber wales, and held in place by float anchor piles. According to information provided by R.R. Amundson the marina's Harbor Master, the float anchor piles are of varying types with varying dates of installation. The original timber float anchor piles were installed at the time of the original marina construction in 1985. The octagonal pre-stressed concrete piles were installed prior to 1991. The marina has a number of composite piles which appear to be constructed of an interior steel pipe section with an outer hard plastic casing. The composite piles on Dock B were installed in the early 1990's. The composite piles on the Dock C and E

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extensions were installed in the mid 1990's along with a number composite piles installed on Dock B to replace previously installed composite piles that had developed significant defects.

The piles within each dock or float system have been identified numerically. Refer to Appendix B for a layout of the marina and identification of the piles included within this investigation.

SCOPE OF WORK

For this project, Level 1 visual inspection of a representative sample of accessible piles and floats was conducted as feasible within the two day time frame. Additionally Level II Inspection of some of the members was conducted to aid in the overall assessment of the member and as time allowed. Level II Inspection provided for detailed investigation of a member consisting of cleaning, probing, and/or hammer sounding. No Level III Investigation (coring, destructive or nondestructive testing,) was conducted.

Specifically the inspection included:

- Portions of the piling that support the moorage floats from the water line to the mudline (i.e. ~El. +5 to the mudline).
- Submerged portions of the concrete pontoons in areas near the inspected piling (i.e. sides and bottom surface).
- A general visual, swim-by of the submerged portions of the existing rubble mound breakwater (i.e. both sides)

QUALIFICATIONS OF INSPECTORS

The investigation was conducted by a crew composed of professional and technical personnel capable and experienced in both the underwater and topside inspection and assessment of structural members. The personnel utilized on this project included the following Echelon Engineering staff:

S.D. Sommerfeld, P.E.	Project Manager/Engineer - Diver Licensed Professional Engineer, WA, AK, Guam 30 Years' Experience in Marine Structures Inspection and Design
D. B. Beattie	Field Supervisor – Sr. Inspection Diver 3 Years' Experience in Marine Structures Inspection
R.G. Provencher	Inspection Technician - Diver 2 Years' Experience in Marine Structures Inspection

INSPECTION METHODOLOGY AND RATING SYSTEMS

The inspection was conducted diligently, with properly qualified personnel and in conformance with the usual standards of similar companies performing similar services under similar circumstances. The inspection was conducted as a Routine Inspection of a sampling of representative piling from ~El. +5 to the mudline and of the submerged portions of the associated floats. The members were inspected as outlined in the *ASCE Manuals and Reports on Engineering Practice No. 130* (MOP 130)*;* ***Waterfront Facilities Inspection and Assessment*** with one exception. For this project the inspected members were subjected to Level I and II inspection techniques as recommended for timber, steel and concrete. However, no Level III inspection was conducted.

All of the piles randomly selected for investigation received a comprehensive Level I visual inspection from ~El. +5 (MLLW) to the mudline. The floats in the immediate area of the inspected piles were subjected to Level I inspection of the submerged portions, (i.e. the sides and bottom surface). Suspect members (~10%) were then subjected to Level II inspection techniques, which provides for cleaning and more thorough inspection to further assess the extent of any damage encountered. Cleaning of the piling was conducted at random locations, as well as at locations of suspected defects as determined by the inspector. Additionally, areas of ~2'x2' were cleaned at several locations on the submerged portions of the inspected floats. The rubble mound breakwater was subjected to a Level I swim-by inspection to visually assess the uniformity of the rip rap slope, the toe of the slope, as well as to identify any areas of gross damage or deficiencies where stone may have tumbled down the slope.

The results of the investigation are discussed in the Observed Conditions section of this report. Photographs illustrating typical conditions encountered are presented in Appendix A. Appendix B provides a pile plan showing the location, identification and condition of the inspected piles. Specific data on the specific piles inspected, including type (i.e. timber, steel, concrete, or composite/plastic), damage details and rating for the portion of pile from ~El. +5 to the mudline, is presented in Table 1 of Appendix C.

Overall / General Ratings

Throughout the discussions the overall condition of the facility and the members is described as good, fair or poor in accordance with the following definitions:

- A member in **good condition** has not sustained any damage or has sustained only minor damage.
- A member in **fair condition** has sustained minor to moderate damage, but has no evidence of overstressing.
- A member in **poor condition** has sustained major to severe damage that affects the members load capacity. This damage may be evident as advanced deterioration, overstressing or breakage.

Structural Piling Rating

The condition of the piles is based on the overall damage noted along the inspected length of the member using visual inspection and as augmented with Level II inspection techniques. Inspection was carried out to identify areas of damage or deterioration including biological degradation, abrasion and marine borer damage in timber piles; cracking, spalling and mechanical impact in concrete piles; corrosion, impact and loss of section in steel piles; and cracking, corrosion, impact and disbanding in composite piling. All examined piles were inspected from ~El. +5' (MLLW) to the mudline. The scope of this project did not include investigation of the portions of the piles above ~El. +5'. ***Care should be taken to combine the findings of the investigation of the upper portions of the piling with the findings presented in this report in order to obtain an overall condition and rating for each pile.***

Areas of damage were recorded, including the location and quantification of specific deterioration identified. The condition of each inspected pile has been expressed as a percentage of the remaining cross-sectional area of the member. A breakdown of the rating classifications is as follows:

- **100%** Rating Category -
  No damage or deterioration for concrete, steel & composite
  <1% loss of area for timber
- **90%** Rating Category -
  Minor damage or deterioration for concrete, steel & composite
  90-99% remaining area for timber
- **75%** Rating Category -
  Moderate damage or deterioration for concrete, steel & composite
  75-89% remaining area for timber
- **50%** Rating Category -
  Moderate-Major damage or deterioration for concrete, steel & composite
  50-74% remaining area for timber
- **25%** Rating Category -
  Major damage or deterioration for concrete, steel & composite
  25-49% remaining area for timber
- **0%** Rating Category -
  Severe damage or destroyed for concrete, steel & composite
  0-24% remaining area for timber

Floats

The condition of the concrete mooring floats or pontoons, is based on Level I visual inspection, as well as limited Level II cleaning and detailed examination of the submerged portions. Inspection was carried out to identify areas of damage or deterioration including cracking, spalling, rust bleeding or impact damage. The overall condition of the individual concrete pontoons and float systems is described as good, fair or poor in accordance with the definitions provided above.

Rip Rap Breakwater

The overall condition of the submerged portions of the Breakwater has been based on Level I visual, swim-by inspection of both sides of the structure. The investigation was carried out to identify any locations of missing or displaced amour stone or other visual deficiencies in the barrier. The condition of the breakwater is describes as good, fair, or poor in accordance with the definitions provided above.

OBSERVED CONDITIONS

The findings presented within this report should be combined with the findings of the topside inspection of the piles conducted from ~El. +5 and above, and the topside inspection of the concrete pontoons (i.e. the above water portions) in order to obtain an overall condition and rating for each of the inspected members. The information presented in this report covers only the portions of the inspected sampling of piles from ~El. +5 to the mudline and the submerged portions of the concrete pontoons included within the sample.

The weather conditions at the time of the inspection were seasonable with cool temperatures and light winds. Underwater visibility ranged from 3-10 ft. No significant current was encountered within the marina.

Float Anchor Piles

The investigation included a total of 106 float anchor piles selected from throughout the marina. The piles selected include members fabricated from all four material types found within the facility. A total of sixty-seven (67) creosote treated timber, three (3) steel pipe piles, six (6) pre-stressed octagonal concrete piles and thirty (30) composite piles. On an overall basis the condition of the float anchor piles is good.

Of the 106 piles inspected, forty-five piles (42.5%) have been rated in the undamaged or 100% remaining area category. Fifty-seven piles (53.8%) were found to have sustained minor defects and are rated in the 90% category. One pile (0.9%) has been rated in the 75%

category and three piles (2.8%) have been rated in the 25% classification. Specific results of the inspection are as follows:

Timber Piling

1. The majority of the float anchor pile within the marina are creosote treated timber. The overall condition of these piles below water is good.

2. Of the 67 timber piles inspected, 39 piles, (58.2%), were found to be undamaged and have been rated at 100% rating category. Refer to Photos No. 9 and 10.

3. Twenty-seven piles, (40.3%), were found to have sustained minor damage or deterioration and have been rated in the 90% rating category. The majority of these piling have sustained minor mechanical abrasion in the intertidal zone due to tidal movement of the floats. Refer to Photo Nos. 13 and 14.

4. One pile, (1.5%), was found to be split at the mudline up approximately seven feet. Despite the expose untreated wood in the core of the pile, no visible evidence of marine borer attack or damage was found, although access to inspection was limited. This pile has been rated in the 75% rating category based on the observed split. Refer to Photo Nos. 11 and 12.

5. Although not within the scope of this investigation, a number of the piles were noted to have sustained damage and deterioration to the protective membrane caps on the tops of the piles. This damage has allowed moisture to penetrated to the untreated core of the piles and has resulted in significant fungal decay in the upper portions of many of these piles. Refer to Photo Nos. 15 and 16.

Steel Pipe Piling

1. A small number of piles within the marina were noted to be steel pipe piles. A total of three steel piles were inspected within the sampling. The overall condition of these piles below water is poor.

2. Inspection of two of the steel pipe piling which secure the outer end of the Fuel Float and inspection of the one steel pipe pile associated with the Breakwater at the marina entrance, found all three to have sustained heavy corrosion and scale extending from the intertidal zone to the mudline. Level II cleaning revealed several locations of extensive corrosive section loss and perforation through the pipe wall on two of the three piles. All three piles have been rated in the 25% rating category. Refer to Photo Nos. 21 – 24 and 26 - 28.

3. Remnants of a thin black painted coating was observed on the Fuel Float piles. Refer to Photo No. 21. Investigation of the pile associated with the Breakwater was inconclusive as to whether it originally was protected with a coating or whether it was bare steel. Inspection found that none of these piles retain any intact coating or cathodic protection anodes below water.

Concrete Piling

1. The sampling included six pre-stressed octagonal concrete piling which secure Mooring Float F. Investigation found them to be in good condition. No visible evidence of cracking, spalling or other significant defects were found on any of these piles below water. As a result, all have been rated in the 100% rating category. Refer to Photo Nos. 17 and 18.

Composite Piling

1. The sampling also included the inspection of 30 composite piling which are located in Mooring Floats B, C, and E. Details on the manufacturing of these piles are no longer available as it appears the firm *Plastic Piling, Inc.* of Rialto California is no longer in business. Based on Echelon's experience, it appears that these piles were fabricated using steel drill string (pipe) as an internal core with recycled plastic bonded to the outside of the steel core. Required lengths could be achieved by screwing individual sections together. Refer to Photos No. 2 – 5.

2. Of the 30 composite piles inspected, 25 piles (83.3%), were found to be undamaged below water. The remaining five piles, (16.7%), were found to have sustained minor damage or deterioration. The damage to these five piles includes abrasion, cracking of the outer plastic sheath and/or corrosion of the interior steel core, particularly at splices in the pile length. Refer to Photos No. 3, 6 - 8.

3. Several of the piles were noted to have splices in the intertidal zone. Refer to Photos No. 3. Additionally, underwater inspection of these piles noted a number with plastic bands around the pile at various elevation. Refer to Photo No. 5. These bands did not appear to be bonded securely to the piles, as they could be moved slightly by the dive inspector. It is our assumption that these bands cover splices in the pile sections where they have been screwed together. Based on the condition of the visible, intertidal zones splices we assume that corrosion at these underwater splices has also occurred. As a result, all thirty of the composite piles have been rated in the 90% category to indicate that they should be monitored during any future underwater inspection, specifically at these apparent splice locations.

4. Although not within the scope of this investigation, a number of the composite piles were noted to have damage or deterioration at or near their tops. This damage includes displacement of the plastic cap at the top of the pile and vertical cracking of the outer plastic casing. The displaced tops allow rain water to gain access to the inner steel core resulting in the possibility of expansive corrosion which may explain the vertical cracking observed on some members. Refer to Photo No. 2.

Concrete Floats

Inspection of the concrete floats was conducted as the dive inspectors swam between the piles within the sampling. Specific results of the inspection are as follows:

1. The overall condition of the examined floats below water appears to be fair to good. Refer to Photo No. 20.

2. Inspection of the individual concrete pontoons found them to be in overall fair to good condition. The majority are floating level in the water with even freeboard. Inspection of the submerged portions of the pontoons noted light to moderate marine growth on the in-water members and no evidence of any significant damage or deterioration. Inspection did identify two locations of minor cracking, both located on the ends of finger piers. The two locations that were identified are, Float G, at Pile G-11 and at Float H, at Pile H-33. Refer to Photo No. 19.

3. Although not within the scope of this investigation, it was noted that the majority of the float anchor pile restraint hoops in fair condition. However significant corrosion and section loss was noted on several hoops throughout the facility. Refer to Photos No. 14 and 18.

Breakwater

Inspection of the rip rap breakwater was accomplished with the diver inspectors swimming along both the inside and outside of the structure looking for anomalies, defects, or damage. The area of the inspection covered from the waterline to the toe of the rip rap where it meets the native mudline. Specific results of the inspection are as follows:

1. The rip rap breakwater was found to be in overall good condition. Based on the visual observation, the armor stone was found to be essentially intact with the individual stores well interlocked. No evidence of significant sloughing or missing stones were found on either the interior or exterior of the structure. Inspection did note two locations where minor voids in the stone matrix may indicate that a stone has come loose and is missing. Refer to Photos No. 25 and 29. Both locations are near high water, on the outside portion of the breakwater near the south end.

2. The slope on the interior side of the breakwater is essentially linear from the top of the structure down to the toe at the mudline. The slope on the exterior side of the break water was also linear, with the exception of an intermediary shelf located at ~El. -10 feet. Refer to Photo No. 31. The width of the shelf varies, but is approximately 8-10 feet wide. The upper portion of the break water is constructed with large stone ~2 – 5 ft.. The intermediary shelf is composed of sand and small rock, and the lower rip rap slope is constructed with smaller ~1 – 2 ft. stone with sandy areas. Refer to Photos No. 31 - 32.

SUMMARY

In summary, the overall condition of the submerged portions of the John Wayne Marina was found to be fair to good based on the sample of piles and concrete pontoons included within the investigation. ***It should be noted that the findings presented within this report should be combined with the findings of the topside inspection of the piles conducted from ~El. +5 and above, and the topside inspection of the concrete pontoons (i.e. the above water portions) in order to obtain an overall condition and rating for each of the inspected members. The information presented in this report covers only the portions of the inspected sampling of piles from ~El. +5 to the mudline and the submerged portions of the concrete pontoons included within the sample.***

The condition of the examined float anchor piles from ~El. +5 to the mudline was noted to be generally good with 97.1% of the piles rated to retain 75% or more of their original cross section. The majority of these piles are creosote treated members that remain in overall good condition. Inspection noted that the majority of the piles have sustained some amount of minor mechanical abrasion in the intertidal zone from tidally induced contact with the mooring floats. With one exception, no evidence of any significant damage to the inspected piling was found below ~El. +5. The exception noted one timber pile that has sustained impact damage at the mudline and is split. This damage likely dates back to the time of original construction and despite the exposure of the untreated core of this pile, and the limited access, no visible evidence of marine borer damage was noted. It was also noted that a number of these timber piles have damaged or no covers at their tops. Moderate to heavy fungal decay was visible in the tops of many of these timber piles.

Three of the inspected piles are steel pipe piles. All three piles were found to have sustained extensive corrosion damage and we recommend that they be evaluated for replacement. If steel piles are to be utilized as replacement members we recommend that the replacement piles be provided with a coating and/or cathodic protection to avoid a recurrence of the corrosion damage.

Six of the inspected float anchor piles are pre-stressed concrete piles all of which were found to be in good condition. No evidence of any cracking, spalling or other significant deterioration was noted found on these piling.

The sampling also included thirty composite piles. These piles have an inner steel pipe core and an outer recycled hard plastic casing. The majority of these piles appear to be undamaged with no defects noted below water. However, five of these piles were found to exhibit evidence of deterioration or damage including cracking of the outer plastic shell and/or corrosion of the inner steel core. Additionally, two piles were noted to have apparent splices in the intertidal zone which exhibit significant corrosion of the inner steel component(s). Below water inspection also noted what appears to be splice locations. At these locations, the piles have a plastic band around the pile which we believe covers splices in the submerged zone. No evidence of any rust bleeding was noted at any of these banded locations, but the condition of the underlying material is unknown. Given these findings and the relative scarcity of performance data on these types of piles, the remaining service life of these members is unknown. We recommend that these piles be monitored in future inspections, particularly at the elevations of the bands. It was also noted that at or near the tops of a number of these composite piles, that the top plastic covers have become displaced and that several have sustained vertical cracks in the outer plastic casing.

Inspection of the submerged portions of the floats included the accessible sidewalls and the bottom surfaces. Visual inspection identified two locations of intermittent minor cracking, but no locations of significant spalling or other gross deterioration or damage.

Inspection of the rip rap breakwater found the structure to be in good condition with no significant voids or damage encountered.

In summary, we recommend that the remaining portions of the marine be inspected to develop a complete database of the pile and float conditions. Additionally, the heavily damaged piling should be evaluated for maintenance or replacement based on the condition of the adjacent members and the loading conditions for the facility. Additionally, as per ASCE guidelines, we recommend that Routine Inspection of the submerged portions of the marina be scheduled for 3 to 5 year intervals. Given the dynamic nature of the marine environment, re-inspections within this schedule have proven to be a cost-effective component of a preventative maintenance program for facilities such as the John Wayne Marina. These re-inspections, would as in the case of the current inspection, identify any specific member(s) that might require maintenance, as well as to monitor the overall condition of the facility.

Once again it has been a pleasure to assist you with this project. Should you have any questions concerning this report, or if we can assist you further, please do not hesitate to contact our office.

Yours truly,
Echelon Engineering, Inc.

Shelley D. Sommerfeld, P.E.
President

Enclosures
SDS/ebv

EXPIRES: 6 / 6 / 2019

PHOTO No. 1:
John Wayne Marina, Looking Southeast – Note the Guest Float (center) and Fuel Float (right) in the foreground and the marina mooring floats in the background.

PHOTO No. 2: Float B, Pile No. B-9 – Note the diver inspecting the composite float anchor pile. Also note the displaced cap at the top of the pile and the arrow approximately two feet above the water surface where a horizontal cut was found in the outer recycled plastic casing, or possible splice. Also refer to Photos No. 3 and 4.

PHOTO No. 3: Float B, Pile No. B-9 – Note the approximate ½ inch cut or gap between the upper and lower sections of the outer plastic casing. It appears that this is a splice between sections of the composite pile.

PHOTO No. 4: Float B, Pile No. B-9, Close Up – Note the corrosion on the exposed inner steel core of the composite pile. The surfaces of the plastic casing were noted to have a "finished" appearance. Evidence that this was a cut in the plastic supporting the possibility that this is a splice location.

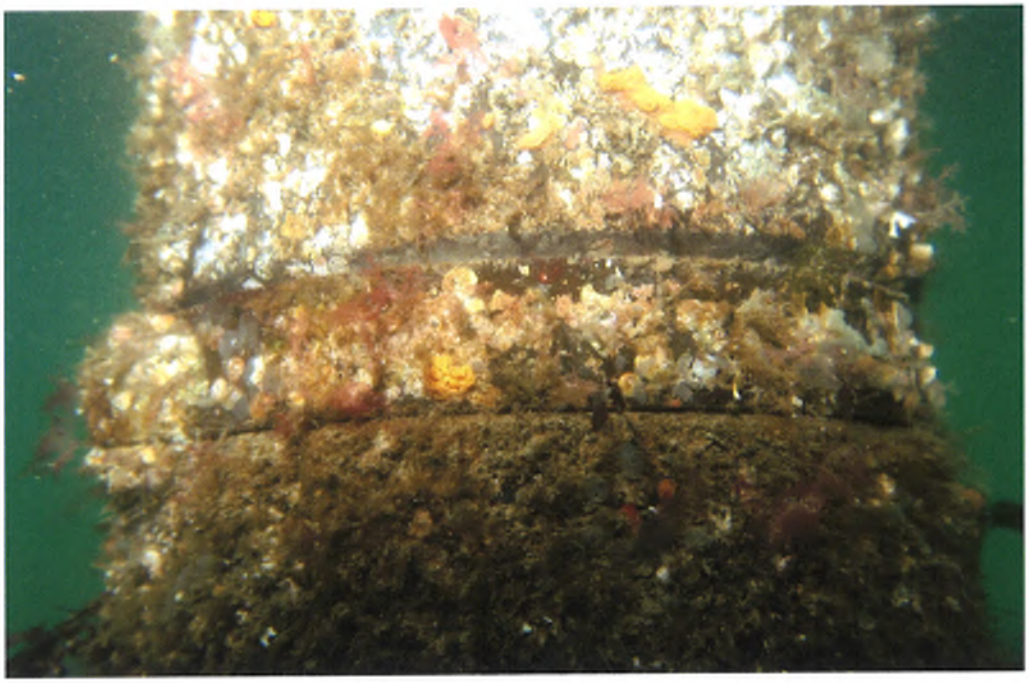


PHOTO No. 5: Float B, Pile No. B-18 - Note the band around this composite pile in the submerged zone. The band appears to be manufactured of recycled plastic and is assumed to cover a splice where drill string sections have been screwed together. No evidence of any rust bleeding was noted.

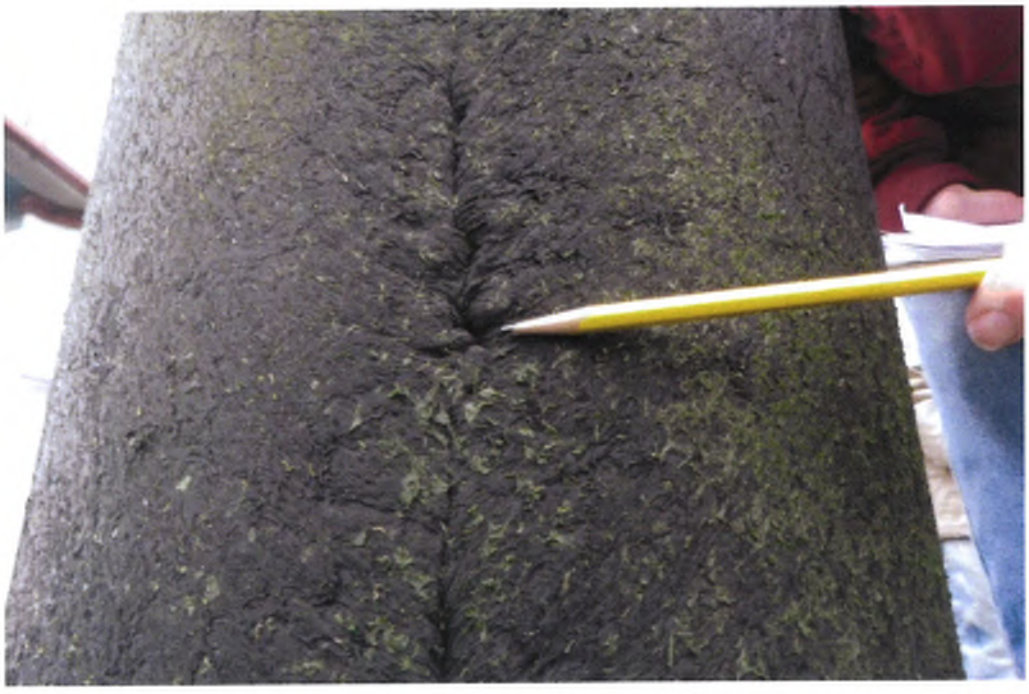


PHOTO No. 6: Float B, Pile No. B-17 - Note the vertical seem in the outer plastic casing on this composite pile. Several piles were noted to have vertical anomalies that on close inspection were found to be what appears to be a seem which developed during manufacture.

PHOTO No. 7: Float B, Pile No. B-5 – Note the approximate six foot long vertical crack in the outer plastic casing on this composite pile. No evidence of similar cracking was found below water.

PHOTO No. 8: Float C, Pile No. C-10 – Note the mechanical abrasion damage to this pile in the splash zone. No evidence of perforation of the outer plastic casing or visible evidence of corrosion or rust was found associated with this area. Inspection of the pile below water did not identify any damage or deterioration.

PHOTO No. 9: Float C, Pile No. C-14 – Note the light to moderate marine fouling on this creosote treated timber pile. This was found to be typical of the growth on the piles from the intertidal zone to the mudline. Inspection found this pile to be in good condition below water.

PHOTO No. 10: Float C, Pile No. C-14 – Note the good condition of the timber pile at the mudline and the sandy-silty composition of the mudline.

PHOTO No. 11: Float C, Pile No. C-12 – Inspection found this timber pile to be split from the mudline up approximately 7 feet. The cause of the damage is uncertain but appears to have occurred during original pile driving where the tip may have encountered a buried rock or other hard item.

PHOTO No. 12: Float C, Pile No. C-12, Close-up - Access to the internal core was limited, however, investigation found no apparent evidence of marine borer activity.

PHOTO No. 13: Float F, Pile No. F-13 – Note the mechanical scoring of the pile by the galvanized bolt in this steel stanchion bracket. The damage was estimated at approximately 5% loss and extends into the intertidal zone below water.

PHOTO No. 14: Float H, Pile No. H-28 – Inspection noted a number of timber piles which have sustained this type of abrasion damage in the intertidal zone. Also note the heavy corrosion and perforation of the galvanized restraint hoop at this location. Several of the hoops were noted to have sustained extensive corrosive and section loss.

PHOTO No. 15: Float C, Pile No. C-12 – Note the damaged fabric pile cover and the fungal cavity and vegetation evident in this pile top. Several piles were noted to have similar damage where in the fabric covers have been damaged allowing moisture to penetrate into the untreated core of the pile resulted in extensive fungal decay.

PHOTO No. 16: Float D, Pile No. D-7 - Note the damaged fabric cover and the fungal cavity evident in the top of the pile.

PHOTO No. 17: Float F, Pile No. F-18 – Note the good condition of the octagonal pre-stressed concrete float anchor pile. No evidence of significant damage or defect was found below water.

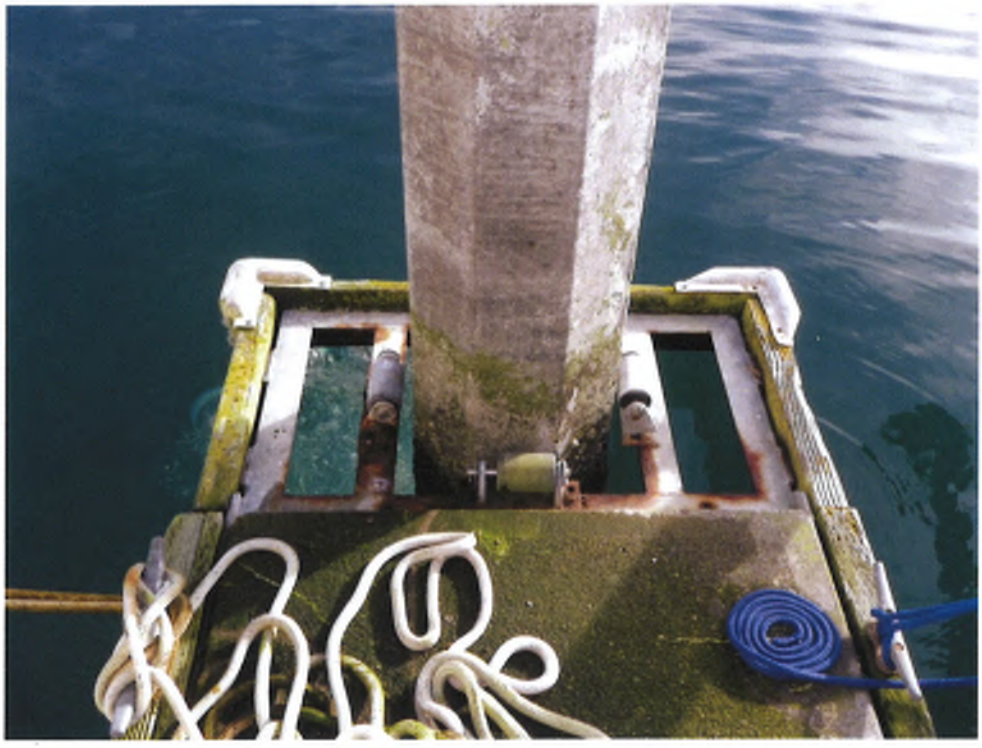


PHOTO No. 18: Float F, Pile No. F-24 – Note the good condition of this concreter float anchor pile in the upper intertidal and splash zone. Also note the corrosion of the roller assembly and restraint hoop.

PHOTO No. 19: Float G, Concrete Pontoon At Pile No. G-11 – Note the minor horizontal cracking across the corner of the pontoon. Also note the marine fouling below water on the sides of the floats which was found to be typical of the fouling found on the pontoons throughout the marina.

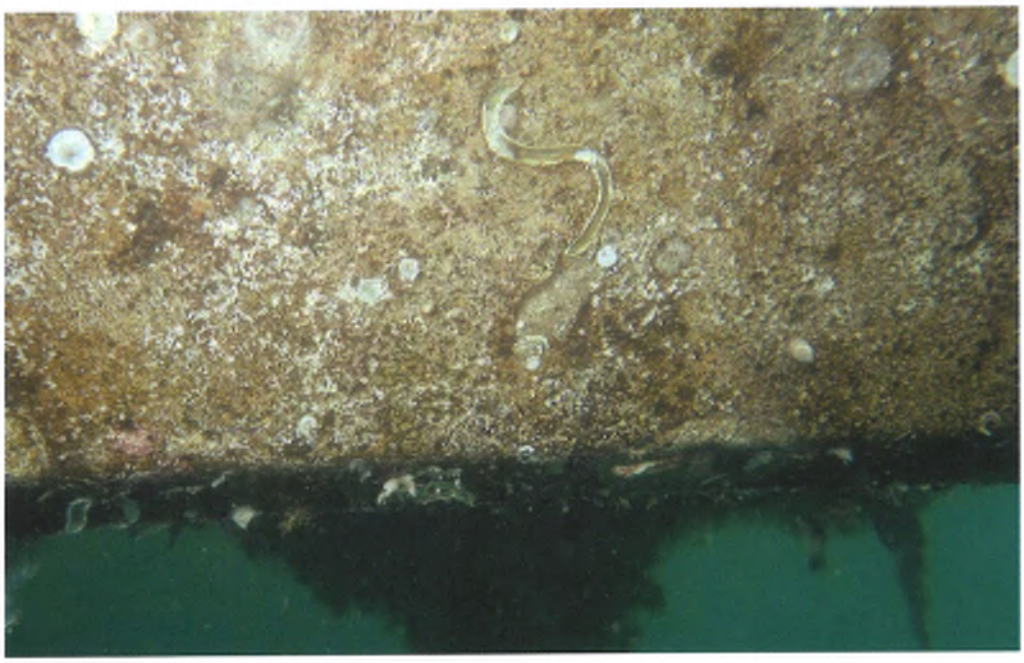


PHOTO No. 20: Float G, Concrete Pontoon Near Pile No. G-7 – Note the good condition of the concrete surface in this area of Level II cleaning which has removed the marine fouling. This was found to be typical of the submerged concrete surfaces in areas of cleaning.

PHOTO No. 21: Fuel Float, Pile No. FF-7 – Note the black painted coating visible from the splash zone (i.e. above the corrosive scale) to the top of the pile. Also note the heavy surface corrosion and scale evident in the upper intertidal zone which was found to extend to the mudline on the pile.

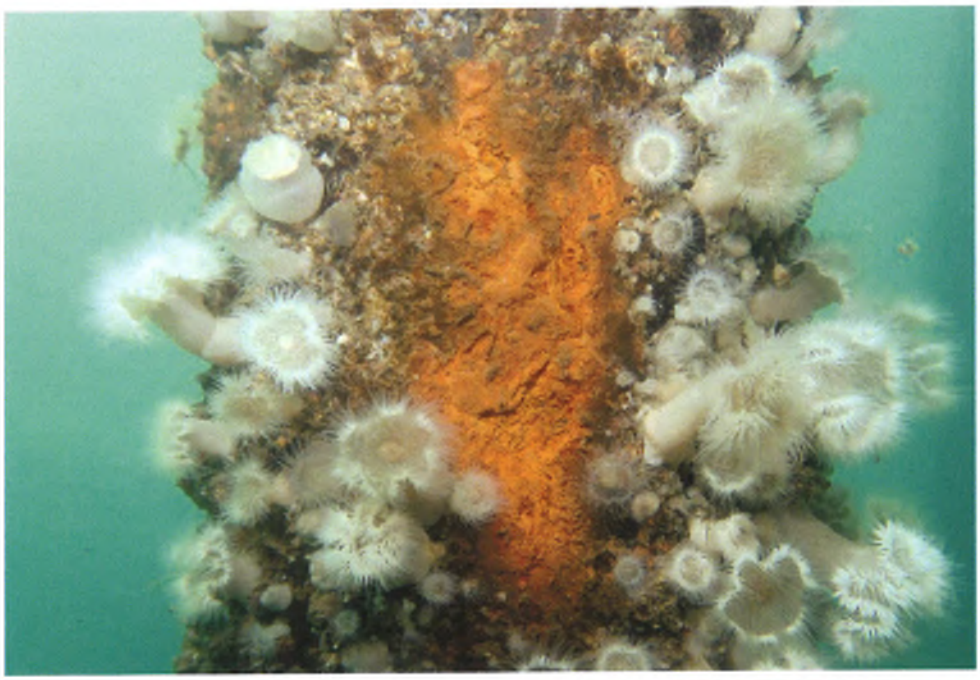


PHOTO No. 22: Fuel Float, Pile No. FF- 7 - Note the area of bright orange corrosion evident at this location where the fouling has been removed in the submerged zone. Further cleaning of the corrosive scale found several areas of perforation at various elevations.

PHOTO No. 23: Fuel Float, Pile No. FF-7 – Note the generalized corrosion on the pile. This condition was found to be typical throughout the submerged zone. Also note the rough appearance of the steel in the area of Level II cleaning. Close examination also noted moderate to heavy pitting of the steel.

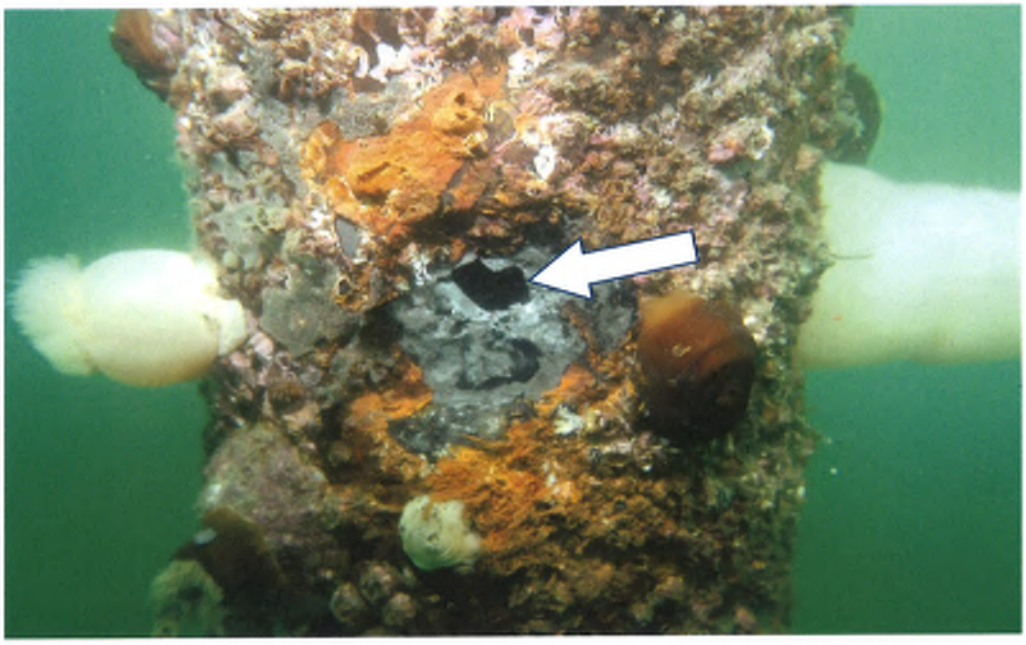


PHOTO No. 24: Fuel Float, Pile No. FF-7 – Note the approximate 2 inch diameter perforation through the side wall of this steel pipe pile in the area of Level II cleaning. Several elevations of perforation were noted along the submerged length of the pile.

PHOTO No. 25:

Marina Entrance, Looking East – Note the western end of the rip rap Breakwater and the four Breakwater fender/guide piles. Pile A is a steel pipe pile. Piles B, C and D were noted to be creosote treated timber piling.

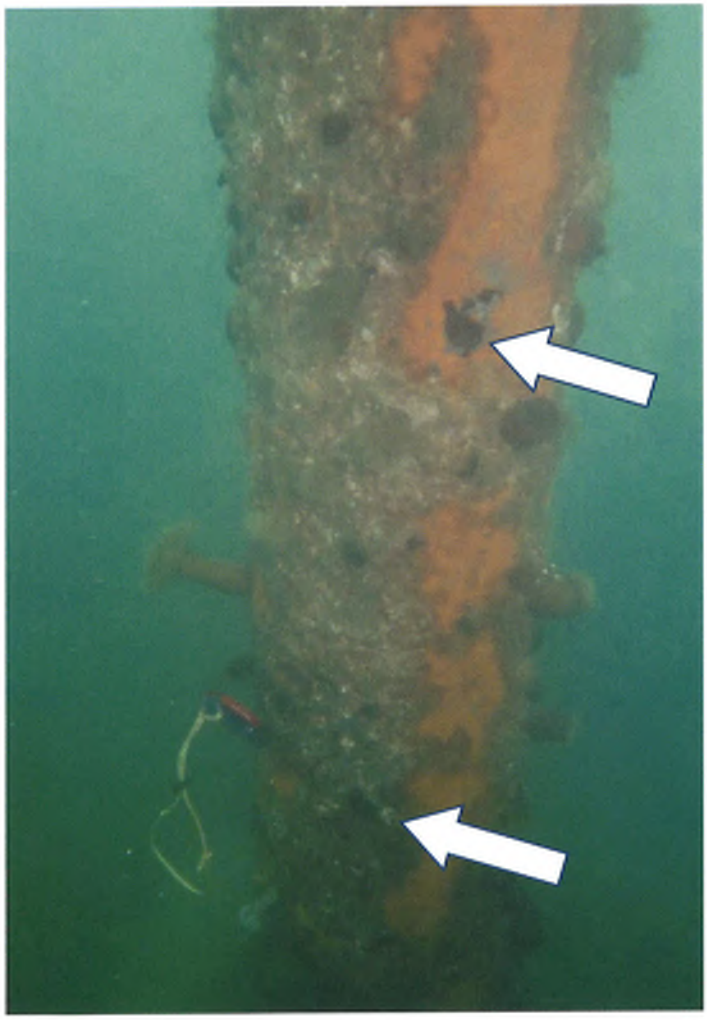


PHOTO No. 26:

Breakwater, Pile A – Inspection of this steel pipe pile found that it was apparently uncoated, without any cathodic protection. Note the areas of orange, active corrosion and the arrows indicating two locations of perforation through the side wall of the pile. A red handled inspection screwdriver has been inserted in the lower perforation.

PHOTO No. 27: Breakwater, Pile A, Close-up – Note the active corrosion and the approximate 3 inch diameter perforation identified in this pile in the submerged zone.

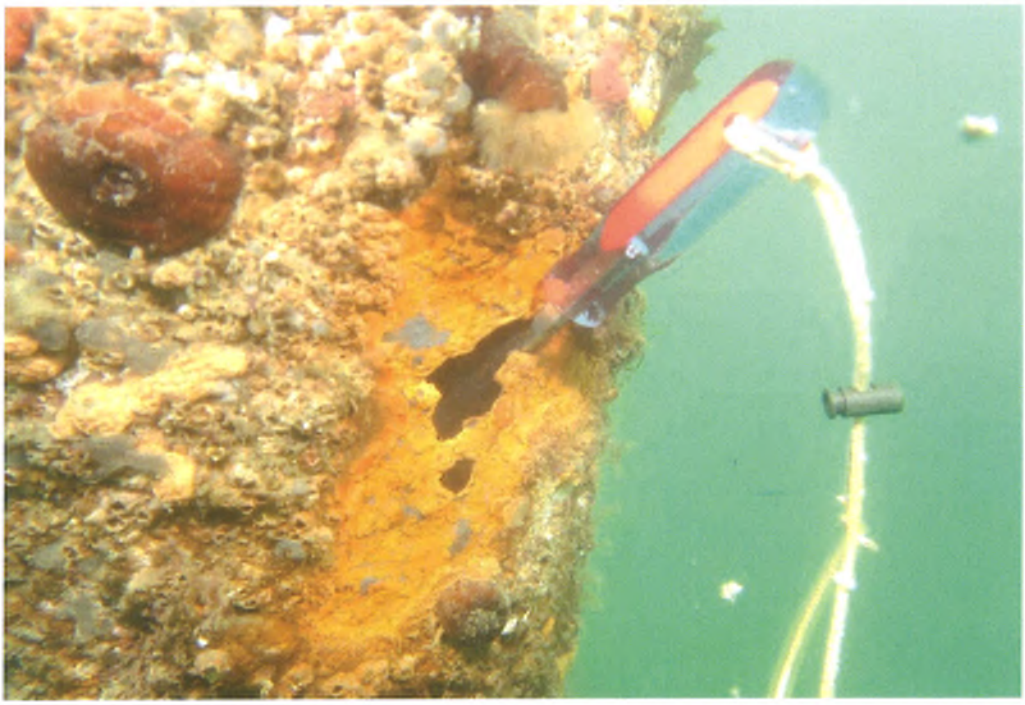


PHOTO No. 28: Breakwater, Pile A, Close-up – Note the screwdriver inserted into the approximate 2 inch diameter perforation. Also note the knife edge thickness around the perforation and the on-going active corrosion of the steel in this area.

PHOTO No. 29: Breakwater, Typical Construction – Note the general, uniform placement of the armor stone along the upper, above water portion of the breakwater. The arrows indicate locations of minor irregularities or gaps in the stone. identified along the outer side of the Breakwater near the southern end.

PHOTO No. 30: Breakwater, Typical Construction – Note the apparent stability of the slope as represented by the interlocking of the individual stones. Visual inspection of the underwater portions of the Breakwater did not identify any areas of significant sloughing or loss of stone along the inside or outside of the breakwater.

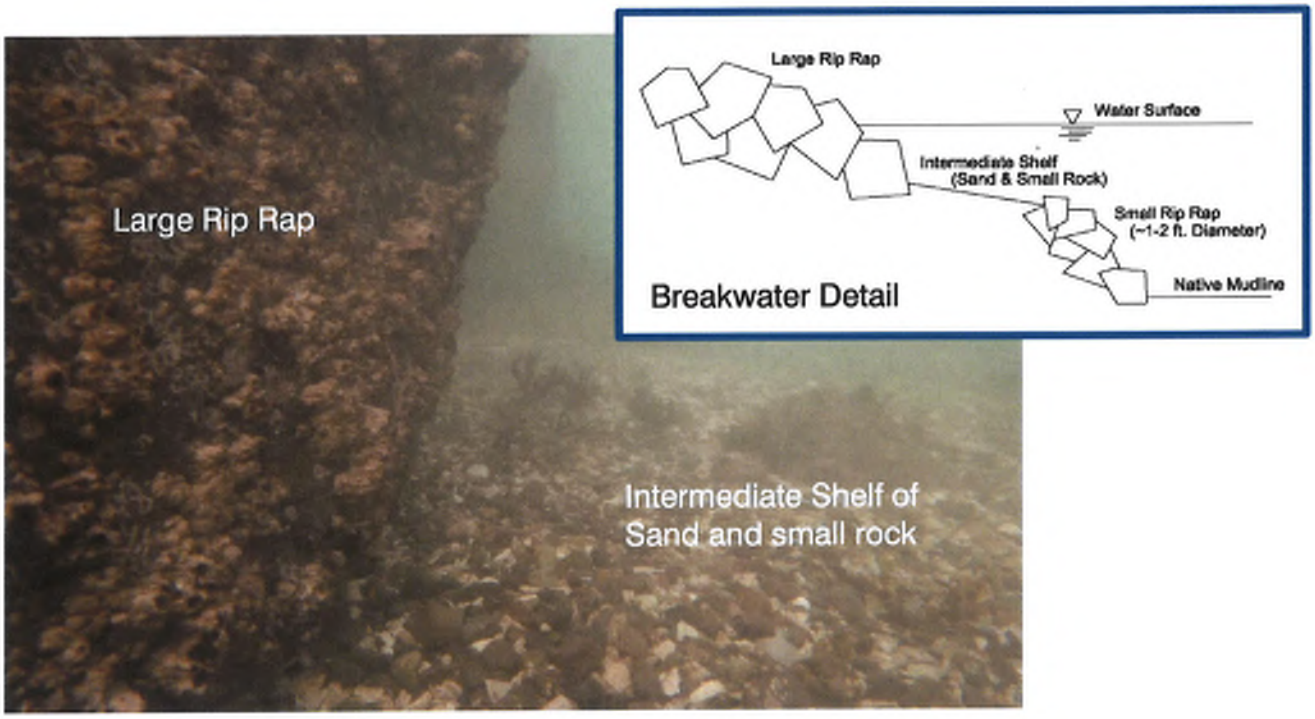


PHOTO No. 31: Breakwater, Outer Side, Near Pile D, Looking Northwest – Note the toe of the upper portion of the Breakwater that rises from an intermediary shelf of sand and small rock. Refer to Insert.

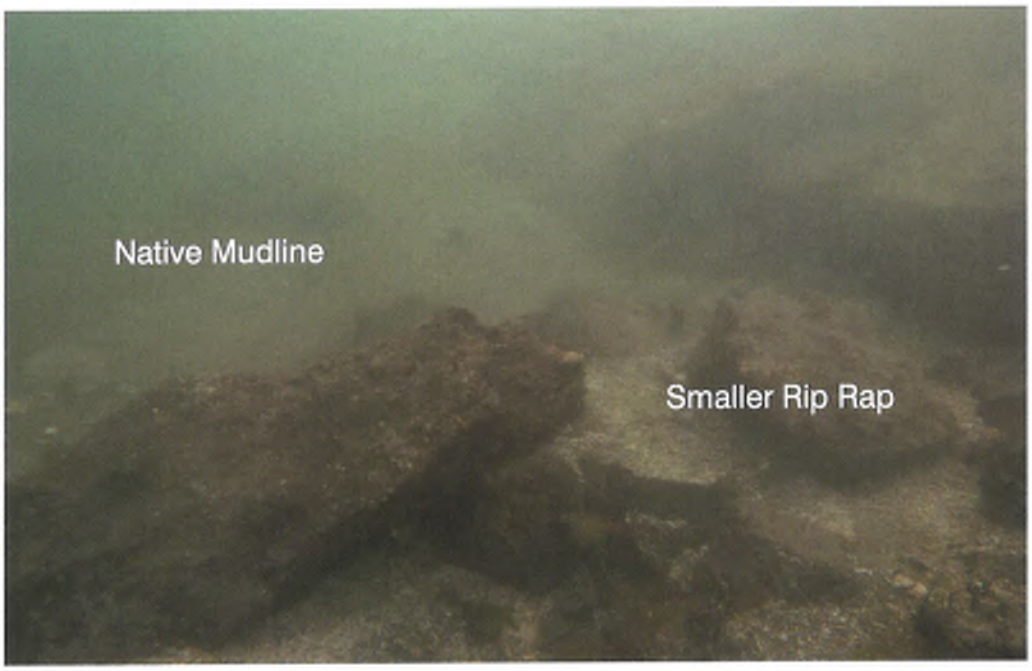
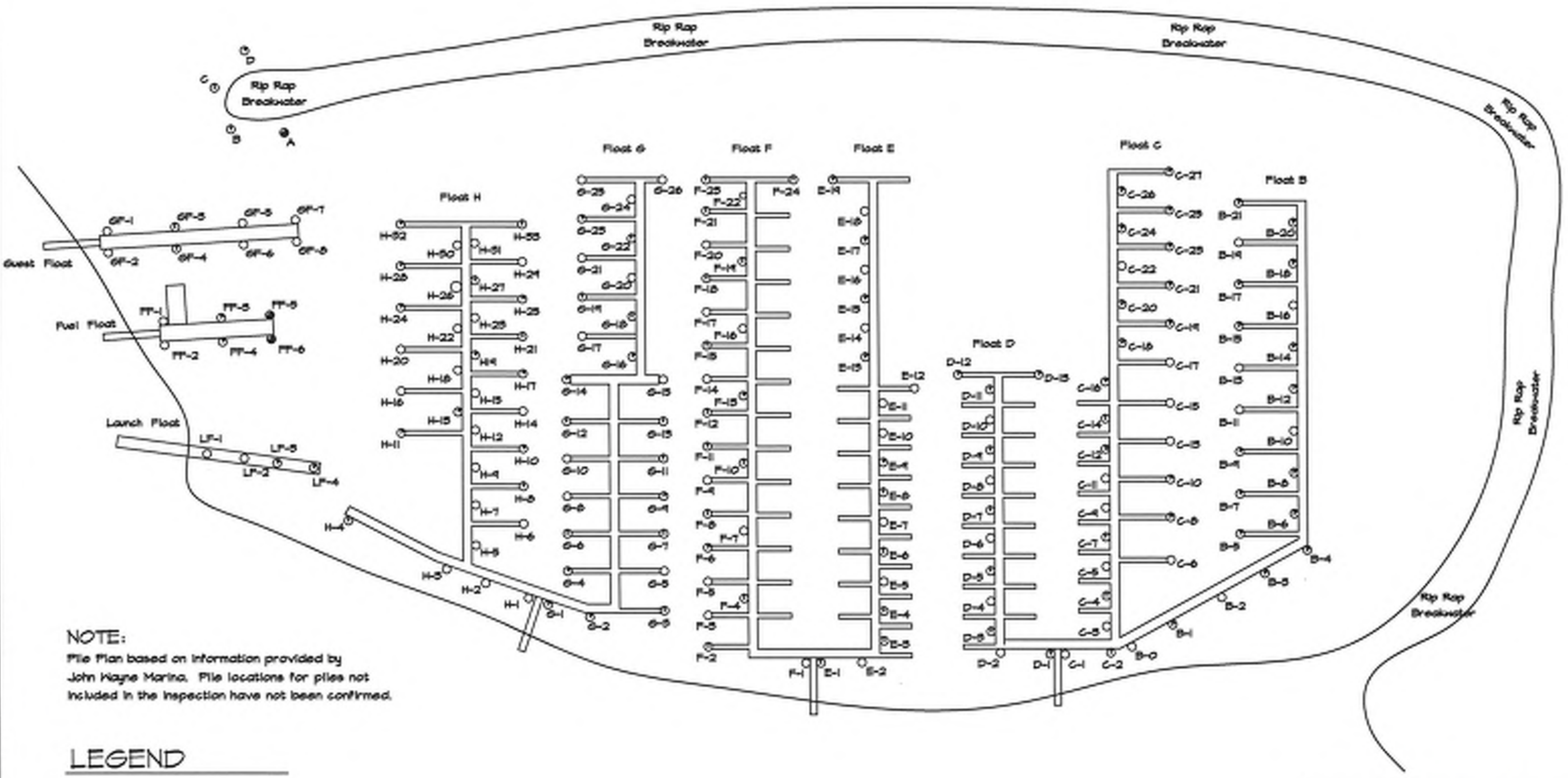


PHOTO No. 32: Breakwater, Outer Side, Near Pile D, Looking Southeast – Inspection noted that the outer side of the Breakwater slopes down from an intermediate shelf of sand and small rock with a smaller rip rap slope which extends to the native mudline.



NOTE:
Pile Plan based on information provided by John Wayne Marina. Pile locations for piles not included in the inspection have not been confirmed.

LEGEND

X-X Pile Number (Float-Pile #)
- 100% Rating Category
- 90% Rating Category
- 75% Rating Category
- 50% Rating Category
- 25% Rating Category
- 0% Rating Category
- Pile Not Inspected, Not In Selected Sample

PILE PLAN

Not To Scale

Reid Middleton, Inc.

John Wayne Marina
Sequim Washington

PILE PLAN

DATE:	Feb. 2014
PROJECT:	15-2554
SHEET:	1 of 1
DRAWN:	JDS / SDS

ECHELON ENGINEERING, INC.
Civil/Marine Consulting Engineers
Lynnwood, Washington
425/672.8424

TABLE 1
STRUCTURAL PILE INSPECTION DATA

PILE LOCATION		MEMBER RATING *	CONDITION / DAMAGE	
Float	Pile ID	(~El. +5' / MDL)	Elevation (Chart Datum)	Details / Remarks
B	B-1	90		Composite Pile
	B-3	90		Composite Pile
	B-4	90		Composite Pile
	B-5	90		Composite Pile
			Tp Dn 6'	Vertical Split In HDPE
	B-6	90		Composite Pile
	B-7	90		Composite Pile
			Tp Dn 1.5'	Vertical Split In HDPE
			ITZ	Horizontal Splice, Steel Casing Exposed with Heavy Corrosion
	B-8	90		Composite Pile
	B-9	90		Composite Pile
			ITZ	Horizontal Splice, Steel Casing Exposed with Heavy Corrosion
	B-12	90		Composite Pile
			Tp Dn 4'	Vertical Split In HDPE
	B-14	90		Composite Pile
	B-15	90		Composite Pile
	B-17	90		Composite Pile
			ITZ	<1% Abrasion
	B-18	90		Composite Pile
	B-20	90		Composite Pile
	B-21	90		Composite Pile
C	C-2	100		Creosote Treated Timber Pile
	C-4	100		Creosote Treated Timber Pile
	C-7	100		Creosote Treated Timber Pile
	C-8	90		Composite Pile
	C-10	90		Composite Pile
			SPL	10% Abrasion of Outer HDPE Casing
	C-12	75		Creosote Treated Timber Pile
			MDL Up 7'	Split-Limited Access, No Apparent Marine Borer
	C-14	100		Creosote Treated Timber Pile

*Pile ratings are based on inspection from ~El. +5' to the mudline. Inspectdion above ~El. +5 not in scope.

TABLE 1
STRUCTURAL PILE INSPECTION DATA

PILE LOCATION		MEMBER RATING *	CONDITION / DAMAGE	
Float	Pile ID	(~El. +5' / MDL)	Elevation (Chart Datum)	Details / Remarks
C	C-16	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	C-18	90		Composite Pile
	C-19	90		Composite Pile
	C-20	90		Composite Pile
	C-21	90		Composite Pile
	C-23	90		Composite Pile
	C-24	90		Composite Pile
	C-25	90		Composite Pile
	C-26	90		Composite Pile
	C-27	90		Composite Pile
D	D-1	100		Creosote Treated Timber Pile
	D-3	100		Creosote Treated Timber Pile
	D-5	100		Creosote Treated Timber Pile
	D-7	100		Creosote Treated Timber Pile
	D-9	100		Creosote Treated Timber Pile
	D-11	100		Creosote Treated Timber Pile
	D-12	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	D-13	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
E	E-1	100		Creosote Treated Timber Pile
	E-3	100		Creosote Treated Timber Pile
	E-4	100		Creosote Treated Timber Pile
	E-6	100		Creosote Treated Timber Pile
	E-8	100		Creosote Treated Timber Pile
	E-9	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	E-13	90		Composite Pile
	E-15	90		Composite Pile
	E-17	90		Composite Pile
	E-19	90		Composite Pile

*Pile ratings are based on inspection from ~El. +5' to the mudline. Inspectdion above ~El. +5 not in scope.

TABLE 1
STRUCTURAL PILE INSPECTION DATA

PILE LOCATION		MEMBER RATING *	CONDITION / DAMAGE	
Float	Pile ID	(~El. +5' / MDL)	Elevation (Chart Datum)	Details / Remarks
F	F-2	100		Creosote Treated Timber Pile
	F-4	100		Creosote Treated Timber Pile
	F-6	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	F-8	100		Creosote Treated Timber Pile
	F-10	100		Creosote Treated Timber Pile
	F-11	100		Creosote Treated Timber Pile
	F-12	100		Creosote Treated Timber Pile
	F-13	90		Creosote Treated Timber Pile
			ITZ	5% Abrasion
	F-15	100		Concrete Pile
	F-18	100		Concrete Pile
	F-19	100		Concrete Pile
	F-21	100		Concrete Pile
	F-23	100		Concrete Pile
	F-24	100		Concrete Pile
G	G-1	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	G-2	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	G-3	100		Creosote Treated Timber Pile
	G-4	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	G-6	100		Creosote Treated Timber Pile
	G-7	100		Creosote Treated Timber Pile
	G-9	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	G-11	100		Creosote Treated Timber Pile
	G-12	100		Creosote Treated Timber Pile
	G-13	100		Creosote Treated Timber Pile
	G-14	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion

*Pile ratings are based on inspection from ~El. +5' to the mudline. Inspectdion above ~El. +5 not in scope.

TABLE 1
STRUCTURAL PILE INSPECTION DATA

PILE LOCATION		MEMBER RATING *	CONDITION / DAMAGE	
Float	Pile ID	(~El. +5' / MDL)	Elevation (Chart Datum)	Details / Remarks
G	G-16	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	G-18	100		Creosote Treated Timber Pile
	G-19	100		Creosote Treated Timber Pile
	G-22	100		Creosote Treated Timber Pile
	G-23	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
H	H-4	100		Creosote Treated Timber Pile
	H-8	100		Creosote Treated Timber Pile
	H-10	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	H-11	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	H-13	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	H-17	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	H-19	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	H-21	100		Creosote Treated Timber Pile
	H-24	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	H-25	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	H-27	100		Creosote Treated Timber Pile
	H-28	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	H-32	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	H-33	100		Creosote Treated Timber Pile
Guest Float	GF-3	100		Creosote Treated Timber Pile
	GF-4	100		Creosote Treated Timber Pile

*Pile ratings are based on inspection from ~El. +5' to the mudline. Inspectdion above ~El. +5 not in scope.

TABLE 1
STRUCTURAL PILE INSPECTION DATA

PILE LOCATION		MEMBER RATING *	CONDITION / DAMAGE	
Float	Pile ID	(~El. +5' / MDL)	Elevation (Chart Datum)	Details / Remarks
Fuel	FF-3	90		Creosote Treated Timber Pile
Float			ITZ	1% Abrasion
	FF-4	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
	FF-5	25		Steel Pipe Pile
			ITZ/MDL	Heavy Corrosion
			-10'	Perforation
	FF-6	25		Steel Pipe Pile
			ITZ/MDL	Heavy Corrosion
Launch	LF-3	90		Creosote Treated Timber Pile
Float			ITZ	1% Abrasion
	LF-4	90		Creosote Treated Timber Pile
			ITZ	1% Abrasion
Breakwater	A	25		Steel Pipe Pile
			ITZ/MDL	Heavy Corrosion
			-5'	Multiple Perforations
	B	100		Creosote Treated Timber Pile
	C	100		Creosote Treated Timber Pile
	D	90		Creosote Treated Timber Pile
			-5'/MDL	1% Shake

*Pile ratings are based on inspection from ~El. +5' to the mudline. Inspectdion above ~El. +5 not in scope.

APPENDIX B: PHOTOS (WATERFRONT AND SITE CIVIL)

Figure 1. B, C, D Pier and Gate Structure

Figure 2. B, C, D Pier Gangway, Piling, Superstructure

Figure 3. E and F Float Pier and Gate Structure

Figure 4. E and F Float Gangway Rusted Grating and Worn Non-Skid Coating

Figure 5. G and H Float Pier and Gate Structure

Figure 6. G and H Float Pier Piling, Gangway, Superstructure

Figure 7. Typical Creosote Treated Timber Piling

Figure 8. B Float Typical Waler & Concrete Float Condition

Figure 9. Float B – Typical Pile Hoop Corrosion

Figure 10. Float C/D Typical Condition

Figure 11. Float C/D – Typical Finger Condition

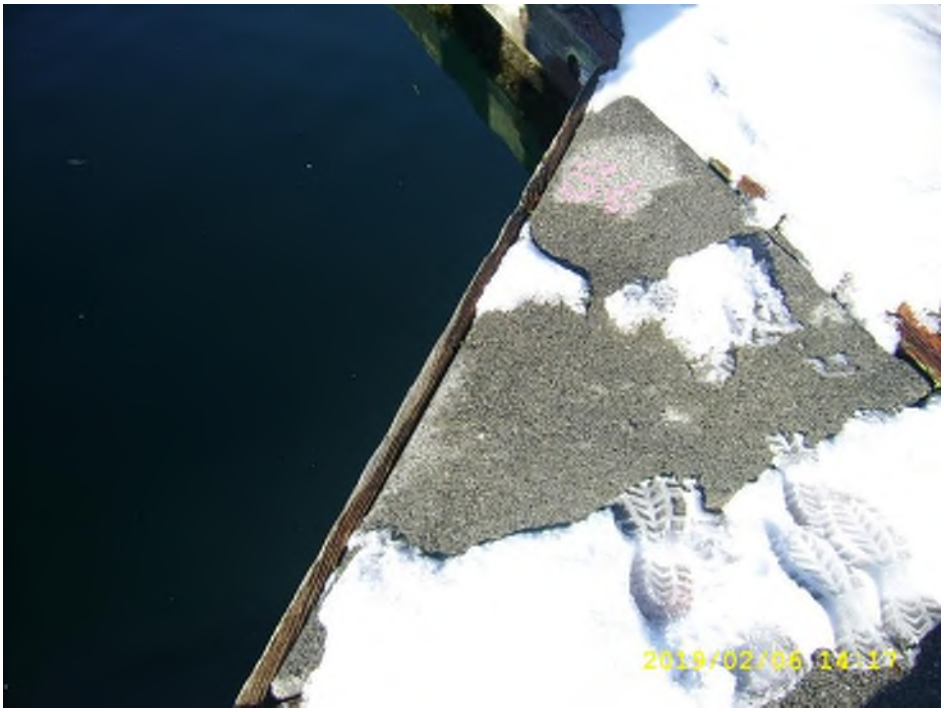


Figure 12. Float C/D – Typical Damaged Concrete Tri-Frame

Figure 13. Floats B/C/D – Typical Deteriorated Rub Boards

Figure 14. Floats B/C/D – Typical Growth and Deterioration at Timber Walers

Figure 15. Float B/C/D – Kayak Float

Figure 16. Float B – Typical Plastic Pile Condition. Note Pile Caps Open.

Figure 17. Float B – Major Damage Vertical Crack in Plastic Pile

Figure 18. Floats C/D – Typical Creosote Timber Pile Condition

Figure 19. Floats E/F – Typical Float Cracking and Waler / Rub Board Deterioration

Figure 20. Floats E/F – Cracking and Rust Staining on Concrete Floats

Figure 21. Floats E/F – Concrete Tri-Frame Damage

Figure 22. Float E – Typical Plastic Pile Condition

Figure 23. Float F – Typical Concrete Pile Condition

Figure 24. Float E/F – Typical Timber Pile Condition

Figure 25. Floats G/H Typical Condition

Figure 26. Floats G/H – Typical Concrete and Waler Condition

Figure 27. Floats G/H – Rust Staining on Concrete Floats

Figure 28. Floats E/F – Typical Deteriorated Rub Boards

Figure 29. Floats G/H – Major Pile Hoop Corrosion

Figure 30. Floats G/H- Severe Pile Hoop Corrosion

Figure 31. Floats G/H – Typical Timber Pile Condition

Figure 32. Guest Float – Pier & Gate Structure Condition

Figure 33. Guest Float – Gangway Condition. Note Rusted Grating & Worn Non-Skid Coating.

Figure 34. Guest Float – Typical Concrete Float and Timber Waler / Rub Board Condition.

Figure 35. Guest Float – Rusted Pile Hoop and Hardware

Figure 36. Guest Float – Broken 18 Inch Cleat

Figure 37. Guest Float – Typical Creosote Timber Pile Condition

Figure 38. Guest Float – Kayak Float

Figure 39. Fuel Float – Pier and Gate Structure Condition

Figure 40. Fuel Float – Gangway Condition. Note Rusted Grating and Worn Non-Skid Coating.

Figure 41. Fuel Float – Typical Concrete Float and Timber Waler / Rub Board Condition

Figure 42. Fuel Float – Typical Timber Pile Condition

Figure 43. Fuel Float – Corroded Steel Pile at End of Float

Figure 44. Fuel Float – Kayak Float

Figure 45. Boat Launch - Ramp & Float

Figure 46. Boat Launch – Typical Concrete Ramp Cracking

Figure 47. Boat Launch – Typical Worn Timber Decking and End Rot.

Figure 48. Boat Launch – Cracked / Deteriorated Life Ring Cabinet

Figure 49. Boat Launch – Pile Hoop Typical Corrosion

Figure 50. Boat Launch – Deteriorated Pile Rollers

Figure 51. Boat Launch – Typical Rub Board and Bumper Damage

Figure 52. Boat Launch – Typical Timber Pile Condition

Figure 53. Marina Utilities – Typical Fire Department Connection

Figure 54. Marina Utilities – Typical Hose Cabinet Deterioration

Figure 55. Marina Utilities – Sanitary Sewer Pumpout on Fuel Float

Figure 56. Marina Utilities – Typical Fuel Pump Condition

Figure 57. Marina Utilities – Typical Hose Bib Condition

Figure 58. Breakwater – Typical Rip Rap

Figure 59. Breakwater – Typical Rip Rap

Figure 60. Guardrail – Typical Timber Guardrail Damage / Deterioration

Figure 61. Guardrail – Typical Timber Guardrail Damage / Deterioration

Figure 62. Upland Utilities – Fire Hydrant

Figure 63. Site Paving – Cracked Pavement with Vegetation Growth.

Figure 64. Site Paving – Parking Stall Striping Worn.

Figure 65. Site Paving – Typical Cracked Pavement

Figure 66. Site Paving – Typical Cracked Pavement

Figure 47. Boat Launch – Typical Worn Timber Decking and End Rot.

Figure 48. Boat Launch – Cracked / Deteriorated Life Ring Cabinet

APPENDIX C: PHOTOS (BUILDINGS – STRUCTURAL AND ARCHITECTURAL)

Figure 1. Administration Building – South Exterior.

Figure 2. Administration Building – Icicle forming from Damaged Gutter Leakage.

Figure 3. Administration Building – Damage to Soffit from Gutter Leakage

Figure 4. Administration Building – Damage to Top Rail at Ramp Railing

Figure 5. Administration Building – Wood Splitting and Corrosion on Steel Members at Deck

Figure 6. Administration Building – Damage to Top Rail at North Stair

Figure 7. Restaurant – Interior

Figure 8. Administration Building – Interior

Figure 9. Remote Restroom – North Exterior

Figure 10. Maintenance Building – Southeast Exterior

APPENDIX D: PHOTOS (BUILDINGS – ELECTRICAL)


B27
B29


RESTAURANT WATER HEATER
ON
SIEMENS
OFF
HIRSCH

APPENDIX E: PHOTOS (BUILDINGS – MECHANICAL)


WARNING
HAZARDOUS VOLTAGE!
AVERTISSEMENT
TENSION DANGEREUSE!
ADVERTENCIA
¡VOLTAJE PELIGROSO!
NOTICE
AVIS
AVISO

HP-1A (Photo 1)

HP-1B (Photo 2)

HP-2A (Photo 3)

HP-2B (Photo 4)

HP-3A (Photo 5)

HP-3B (Photo 6)

F-1 *(Photo 7)*

Ductwork *(Photo 8)*

Ductwork *(Photo 9)*

Ductwork *(Photo 10)*

Ductwork *(Photo 11)*

Ductwork (Photo 12)

Controls (Photo 13)

Controls (Photo 14)

Controls *(Photo 15)*

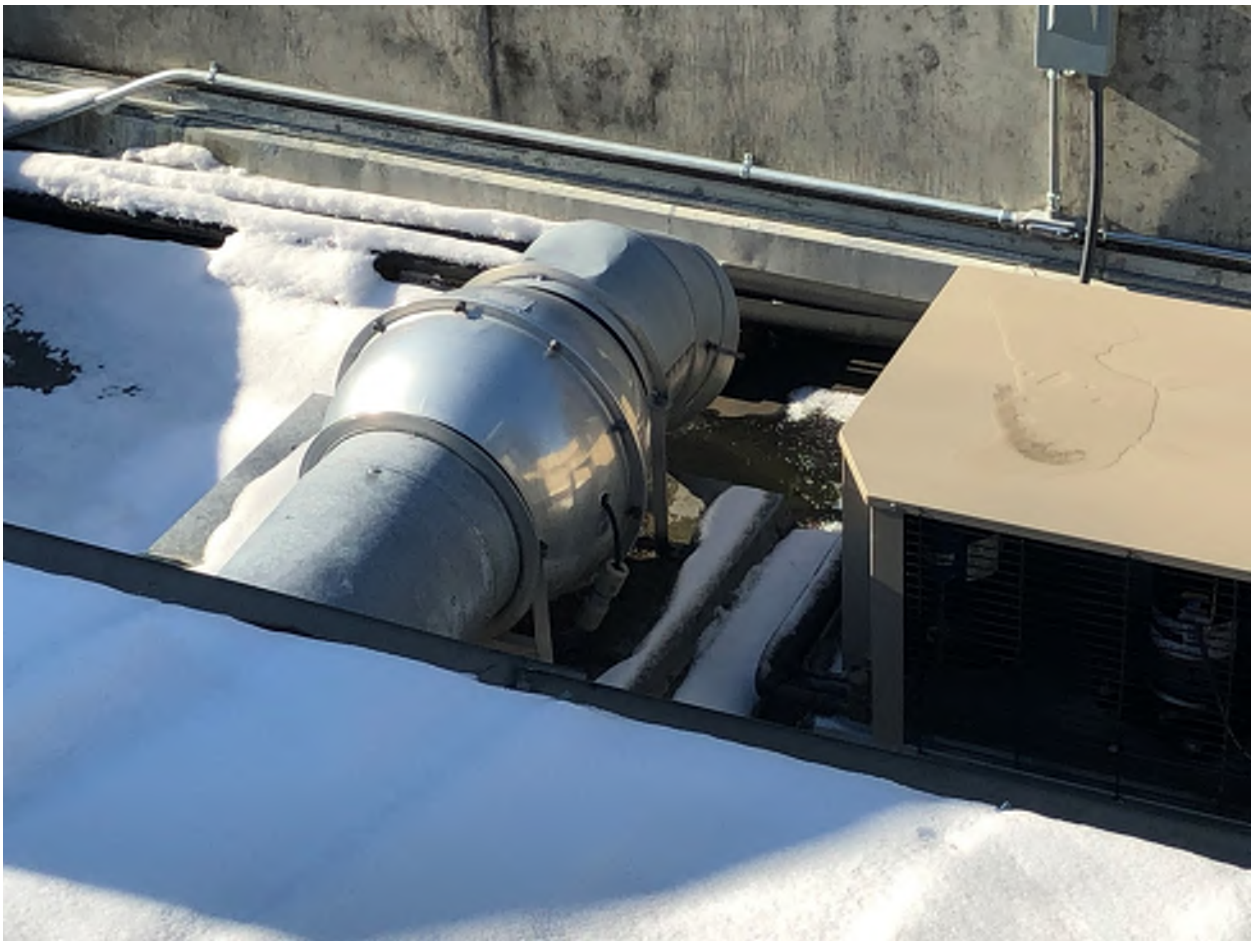
WP-HP-1 *(Photo 16)*

WP-HP-2 *(Photo 17)*

HX-1/EF-1 *(Photo 18)*

HX-1/EF-1 *(Photo 19)*

HX-1/EF-1 *(Photo 20)*



EF-2 (Photo 21)

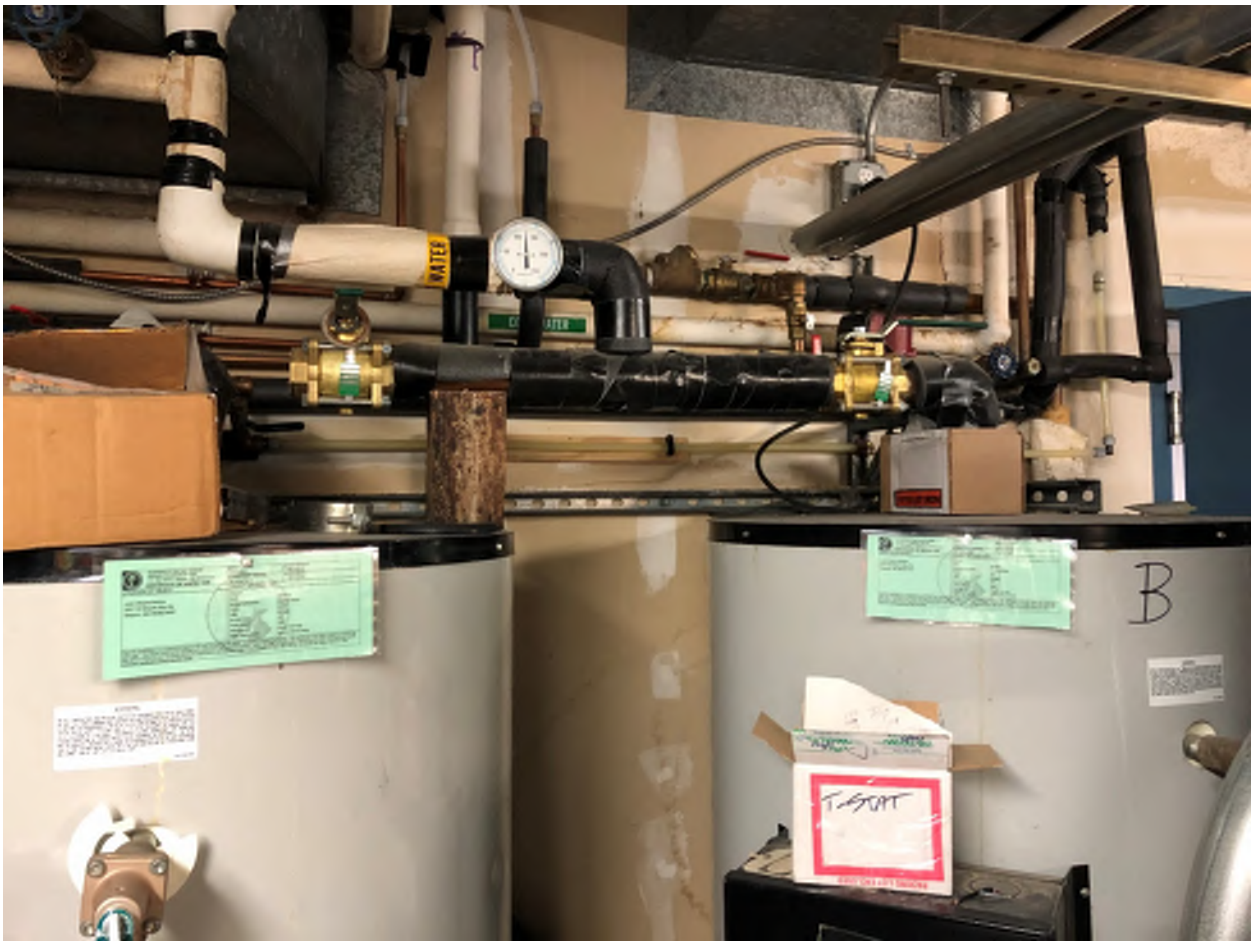
EF-3 *(Photo 22)*

Mini-Split A *(Photo 23)*

Mini-Split B *(Photo 24)*

Mini-Split B *(Photo 25)*

DWH-1A/1B *(Photo 26)*



DWH-1A/1B *(Photo 27)*

DWH-2 (Photo 28)

Piping Systems *(Photo 29)*

Piping Systems *(Photo 30)*

Piping Systems *(Photo 31)*

Piping Systems *(Photo 32)*

Piping Systems *(Photo 33)*

Plumbing Fixtures *(Photo 34)*

Plumbing Fixtures *(Photo 35)*

Plumbing Fixtures *(Photo 36)*

Plumbing Fixtures *(Photo 37)*

Plumbing Fixtures *(Photo 38)*

MUA-1 (Photo 39)

MUA-1 (Photo 40)

EF-K1 (Photo 41)

F-2 *(Photo 42)*

EF-5 *(Photo 43)*

EF-7 *(Photo 44)*

APPENDIX F: FUEL TANK & PIPING TEST REPORT (2018)

SME SOLUTIONS, LLC

Invoice Number: 253289
Date: 3/23/2018
PO/Release #: RON
SME Ref #: 253289

RECEIVED
APR 23 2018
PORT OF PORT ANGELES

Bill To:
MDEALX2277
John Wayne Marina
PO Box 1350
Port Angeles WA 98362

Location of Work:
M0156-2277
John Wayne Marina
2577 W Sequim Bay Rd
Sequim WA 98382

Description	Measure	Qty.	Price	Extended
Compliance Testing, Completed: Tank Monitor Certification, Line Test, Leak Detector Test, DOE Check List Nontaxable Bid	EA	1	$1,750.00	$1,750.00

PAID
CK. NO.
DATE

Paid 4/10/18
#407859

For your convenience, we accept credit cards.

NET 10

Sub-total:	$1,750.00
Tax:	$0.00
Total Due:	$1,750.00

** See attached for signatures and detail of work performed **

10107 South Tacoma Way, #A2, Lakewood, WA 98499 253-572-3822 office 253-572-0978 fax

California CCB# 974078 Oregon CCB#174332 Washington CCB# SMESOL*935CH

DEPARTMENT OF ECOLOGY
State of Washington

UST ID #: 6720

County: Clallam

LEAK TESTING CHECKLIST
FOR UNDERGROUND STORAGE TANKS

This checklist certifies testing activities were conducted in accordance with Chapter 173-360 WAC. Instructions are found on pages 4 and 5.

DATE TEST CONDUCTED: 3 / 19 / 2018

I. UST FACILITY	II. CERTIFIED SERVICE PROVIDER
Facility Compliance Tag #: A4298	Service Provider Name: Mike Wertz
UST ID #: 6720	Company Name: SME Solutions, LLC
Site Name: John Wayne Marina	Address: 10107 S. Tacoma Way-Suite A2
Site Address: 2577 W Sequim Bay RD	City: Lakewood State: WA. Zip: 98499
City: Sequim WA	Phone: (253) 572-3822 Email: Michaelw@sme-solutions.com
Site Phone:	ICC Certification Type: ICC-U3
	ICC Cert. #: 8082204 Exp. Date: 4.20.2018

III. UST OWNER/OPERATOR		
Name: John Wayne Marina	Phone:	Email:
Mailing Address: 2577 W Sequim Bay RD	City: Sequim	State: WA Zip: 98382

IV. UST SYSTEM INFORMATION based on observations, not Ecology database
-- use bolded acronyms, where applicable --

	Tank ID:	Tank ID:	Tank ID:	Tank ID:
1. Tank ID # (tank name registered with Ecology)	1	2		
2. Date installed (if known)	7/18/1985	7/18/1985		
3. Tank capacity (gallons)	10000	10000		
4. Tank material (select **NV** if not visually verified): Steel (**ST**); Steel Clad w/ Corrosion Resist (**CLAD**); Fiberglass Reinforced Plastic (**FRP**); **STIp3;** Not Visible (**NV**)	**FRP**	**FRP**		
5. Tank construction (select **NV** if not visually verified): Single Wall (**SW**); Double Wall (**DW**); Compartment (**COMP**); Not Visible (**NV**)	**DW**	**DW**		
6. Piping material (select **NV** if not visually verified): Steel (**ST**); Fiberglass reinforced Plastic (**FRP**); Flexible Plastic (**FLEX**); Not Visible (**NV**); Other (specify): ____	**FLEX**	**FLEX**		
7. Piping construction (select **NV** if not visually verified): Single Wall (**SW**); Double Wall (**DW**); Not Visible (**NV**)	**DW**	**DW**		
8. Pumping system: Pressurized (**PR**); Safe Suction (**SS**); Non-Safe Suction (**NSS**); Siphon (**S**)	**PR**	**PR**		

V. SERVICES PERFORMED (CHECK ALL THAT APPLY)

Supporting test data and/or documentation must be attached or this checklist is considered incomplete.

		PASS	FAIL	# tested	Describe: dispenser # used for testing lines and ALLD and other information required to duplicate test results.
Lines	☑ ALLD Test Method Used: LDT 890 Mfr. Cert. exp. date: 5/31/2018 ***Manufacturer and model numbers must be provided for each ALLD on the supporting documentation.***	☑	☐	2	Tested from the disp on fuel dock to the turbines. Test passed
	☑ Line Tightness Test Method used: Petro Tite Mfr. Cert. exp. date: 2/2018	☑	☐	2	Tested from the disp on fuel dock to the turbines. Test passed
	☑ Line Interstitial (or Sump Sensor) Test	☑	☐	2	VR 794380-208
Tanks	☐ Tank Tightness Test (i.e. 3rd-party certified test up to overfill prevention level) Method used: Leighton Mfr. Cert. exp. date: 3/12/2019	☐	☐	—	
	☐ Tank Interstitial (or Tank Sensor) Test	☐	☐	—	
UST Equipment	☑ Monitor Equipment Check	☑	☐	1	Veeder Root TLS 350 plus
	☑ Overfill Equipment Check (check all that apply) — ☑ Auto shutoff device	☑	☐	2	Drop Tubes
	☐ Ball float valve	☐	☐	—	
	☐ Overfill Alarm	☐	☐	—	
	☐ Spill Bucket Test	☐	☐	—	
	☐ Tank Sump Test	☐	☐	—	
	☐ Other (describe briefly)	☐	☐	—	

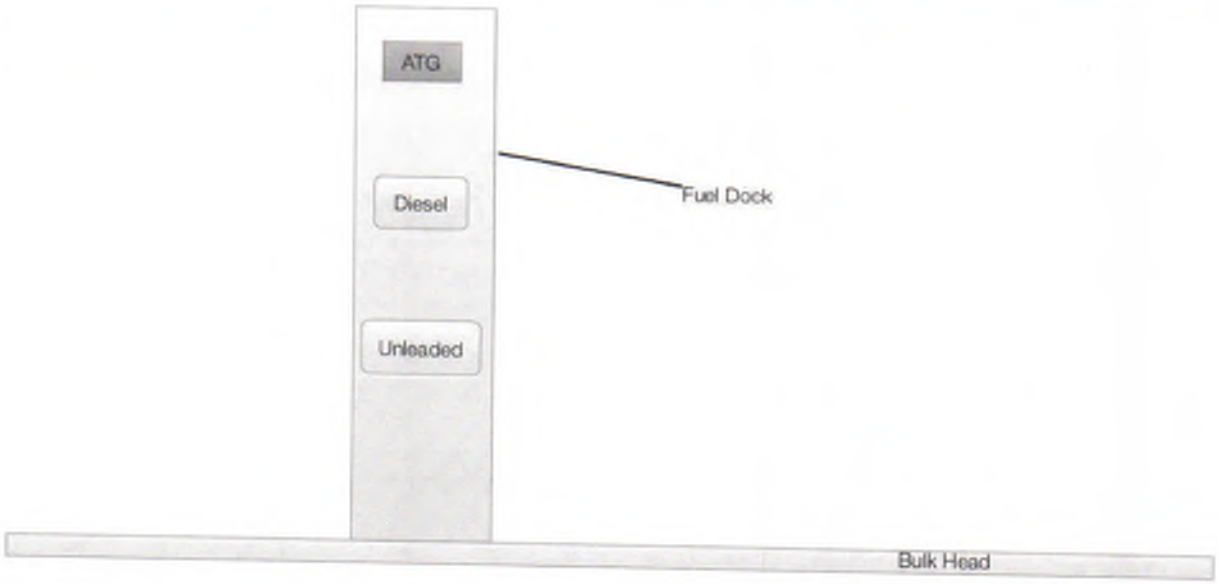
VI. COMMENTS, *including descriptions to problems encountered and how they were addressed.*

VII. CHECKLIST

The following items shall be initialed by the Certified Service Provider.	YES	NO	N/A
1. Have all checked items been tested per recommended practices, code and/or manufacturer's requirements and in accordance with federal and/or state regulations?	X		
2. Has the owner/operator been provided with written documentation of the testing results?	X		
3. Has the owner/operator been made aware of any faulty equipment or necessary repairs?*			X

VIII. Site Diagram

-- include description and/or locations of equipment tested --



John Wayne Marina 2577
Sequim Bay RD

NOT TO SCALE

Persons submitting false information are subject to formal enforcement and/or penalties under Chapter 173-360 WAC.

IX. Required Signatures

Date	Signature of Certified Service Provider	Print or Type Name
3/19/18	M. Wert	Mike Wertz
Date	Signature of Tank Owner or Authorized Representative	Print or Type Name

LEAK TESTING CHECKLIST

INSTRUCTIONS

The tank owner/operator is responsible for:

1. reporting failed tests to the appropriate Ecology regional office within 24 hours, if the test results in a suspected or confirmed release.
2. signing and submitting a copy of the completed checklist to Ecology at the address listed below.

Mail Checklist to:

Department of Ecology

Underground Storage Tank Section

PO Box 47655

Olympia, WA 98504-7600

- The attached Underground Storage Tank (UST) checklist is required for activities described above. Completing this checklist documents and certifies testing activities are performed and conducted in accordance with Chapter 173-360 WAC.
- This checklist must be filled out completely by an International Code Council (ICC) certified provider for Tank Tightness Testing (which covers tanks, lines and leak detectors) within 30 days following the completion of testing activities.
- To be considered complete, the service provider must attach supporting data and/or documentation of testing or inspections completed by the service provider. Proof of testing equipment certification must also be attached.
- A copy of the completed checklist with supporting documentation must be provided to the tank system owner/operator.

I. **UST Facility:** Complete this section about the UST facility and use the facility compliance tag # (license plate) and/or UST ID # (if known) to help identify the location.

II. **Testing Service Provider:** Complete this section about the ICC certified service provider and company.

III. **UST Owner/Operator:** Complete this section about the owner or operator of the UST facility.

IV. **UST System Information:** Identify tank and piping material and construction only if it is visually verified during the site visit. **Do not use Ecology records to complete this section.**

V. **Services Performed:** Check all that apply and specifically describe which equipment was tested. If several components are tested but only one is found to be failing, check "fail" and provide a description of the observations (i.e. which equipment passed or failed). *Note: the UST regulations do not require all of the equipment listed be tested.* An example of Section V is found on page 6.

a. **ALLD:** The ALLD manufacturer, test method used and manufacturer's test method certification expiration date must be provided.

If the piping has main/satellite dispensers, the test must demonstrate the ALLD functions if there is a leak in the entire piping run, including the line that runs to a satellite dispenser. On the checklist, indicate the dispenser number where the testing equipment was connected. Follow testing procedures described by the manufacturer and be sure to verify the leak detector is third-party certified for the UST system and type of product stored.

b. **Line Tightness Test:** The test method and manufacturer's test method certification expiration date must be listed.

   If the piping has main/satellite dispensers, be sure the entire piping run is tested (i.e. all the way to the satellite dispensers). Follow testing procedures described by the manufacturer and verify the test method is third-party certified for the UST system and type of product stored. The service provider must provide proof he is certified to operate the equipment used for testing.

c. **Line Interstitial (or Sump Sensor) Test:** Sensors must be tested per manufacturer specifications or list the Recommended Practice used. Verify the sensors are third-party certified for the product stored.

d. **Tank Tightness Test:**

   i. **Third-party certified test:** The test method and manufacturer's test method certification expiration date must be listed.

      Follow testing procedures described by the third-party certified test method. Be sure the test method is approved for the UST system and product stored. The service provider must provide proof of certification to operate the equipment used for testing.

   ii. **Pre-test:** This test is conducted on the tank ullage and may be used to test tanks prior to receiving fuel. It does not substitute for a third-party certified tank tightness test.

e. **Tank Interstitial (or Annular Sensor) Test:** Interstitial monitoring equipment must be tested as per manufacturer specification or list the Recommended Practice used. Verify the equipment is third-party certified for the product stored.

f. **Monitor Equipment Test:** Include the make and model of automatic tank gauging equipment installed. Describe which components were checked/tested (i.e. probes, sensors, programming, etc.) or list the Recommended Practice used. Be sure to verify the equipment is third-party certified for the UST system and that components are compatible with the product stored.

g. **Dispenser Sump Test:** Describe how the test was conducted or list the Recommended Practice used.

h. **Overfill Equipment Test:** Overfill alarms must be set at 90% tank capacity and verified to be audible to the delivery driver. Describe how the test was conducted or list the Recommended Practice used.

   If ball float valves or automatic shutoffs are installed, describe if they are visually verified and/or removed and inspected for functionality.

i. **Spill Bucket Test:** Describe how the test was conducted or list the Recommended Practice used.

j. **Tank Sump Test:** Describe how the test was conducted or list the Recommended Practice used.

VI. **Comments:** Describe reason for testing and, for failed test results, how and when the problem will be corrected.

VII. **Checklist:** Initial in the appropriate box to answer the questions.

VIII. **Site Diagram:** The site diagram should include location, number and description of tanks and dispensers. Be sure descriptions in Section V are consistent with labels on the site diagram.

IX. **Required Signatures:** The ICC certified service provider must sign and date the completed checklist. The owner/operator must sign and submit the completed checklist to Ecology.

SUPPORTING DATA AND/OR DOCUMENTATION MUST BE ATTACHED FOR THIS CHECKLIST TO BE COMPLETE.

Monitoring System Equipment Certification

This form must be used to document testing and servicing of monitoring equipment. A separate certification or report must be prepared for each monitoring system control panel by the technician who performs the work. A copy of this form must be provided to the tank system owner/operator.

A. General Information

Facility Name: John Wayne Marina Bldg. No.: 2577

Site Address: 2577 W Sequim Bay RD City: Sequim Zip: 98382

Facility Contact Person: Ron Contact Phone Number:

Make/Model of Monitoring System: Veeder Root TLS 350 plus Date of Testing/Servicing: 2018-03-19

B. Inventory of Equipment Tested/Certified

Check the appropriate boxes to indicate specific equipment inspected/serviced:

Tank ID: T-1 Diesel	Model	**Tank ID: T-2 Unleaded**	Model
☑ In - Tank Gauging Probe	Mag	☑ In - Tank Gauging Probe	Mag
☐ Annular Space or Vault Sensor		☐ Annular Space or Vault Sensor	
☑ Piping Sump/Trench Sensor	VR 794380-208	☑ Piping Sump/Trench Sensor	VR 794380-208
☐ Fill Sump Sensor(s)		☐ Fill Sump Sensor(s)	
☑ Mechanical Line Leak Detector	RJ FX2V	☑ Mechanical Line Leak Detector	RJ FX2DV
☐ Electronic Line Leak Detector		☐ Electronic Line Leak Detector	
☑ Tank Overfill/High Level Sensor	Flapper	☑ Tank Overfill/High Level Sensor	Flapper
☐ Other (Specify equipment type and model in Section G on Page 3)		☐ Other (Specify equipment type and model in Section G on Page 3)	

Tank ID: N / A	Model	**Tank ID: N / A**	Model
☐ In - Tank Gauging Probe		☐ In - Tank Gauging Probe	
☐ Annular Space or Vault Sensor		☐ Annular Space or Vault Sensor	
☐ Piping Sump/Trench Sensor		☐ Piping Sump/Trench Sensor	
☐ Fill Sump Sensor(s)		☐ Fill Sump Sensor(s)	
☐ Mechanical Line Leak Detector		☐ Mechanical Line Leak Detector	
☐ Electronic Line Leak Detector		☐ Electronic Line Leak Detector	
☐ Tank Overfill/High Level Sensor		☐ Tank Overfill/High Level Sensor	
☐ Other (Specify equipment type and model in Section G on Page 3)		☐ Other (Specify equipment type and model in Section G on Page 3)	

Tank ID: N / A	Model	**Tank ID: N / A**	Model
☐ In - Tank Gauging Probe		☐ In - Tank Gauging Probe	
☐ Annular Space or Vault Sensor		☐ Annular Space or Vault Sensor	
☐ Piping Sump/Trench Sensor		☐ Piping Sump/Trench Sensor	
☐ Fill Sump Sensor(s)		☐ Fill Sump Sensor(s)	
☐ Mechanical Line Leak Detector		☐ Mechanical Line Leak Detector	
☐ Electronic Line Leak Detector		☐ Electronic Line Leak Detector	
☐ Tank Overfill/High Level Sensor		☐ Tank Overfill/High Level Sensor	
☐ Other (Specify equipment type and model in Section G on Page 3)		☐ Other (Specify equipment type and model in Section G on Page 3)	

*If the facility contains more tanks or dispensers, copy this form. Include information for every tank and dispenser at the facility.

Site Address: 2577 W Sequim Bay RD

Date of Testing/Servicing: 2018-03-19

Dispenser ID: Diesel ☐ Dispenser Containment Sensor(s) Model: ____ ☑ Shear Valve(s) ☐ Dispenser Containment Float(s) and Chain(s)	**Dispenser ID:** Unleaded ☐ Dispenser Containment Sensor(s) Model: ____ ☑ Shear Valve(s) ☐ Dispenser Containment Float(s) and Chain(s)
Dispenser ID: N / A ☐ Dispenser Containment Sensor(s) Model: ____ ☐ Shear Valve(s) ☐ Dispenser Containment Float(s) and Chain(s)	**Dispenser ID:** N / A ☐ Dispenser Containment Sensor(s) Model: ____ ☐ Shear Valve(s) ☐ Dispenser Containment Float(s) and Chain(s)
Dispenser ID: N / A ☐ Dispenser Containment Sensor(s) Model: ____ ☐ Shear Valve(s) ☐ Dispenser Containment Float(s) and Chain(s)	**Dispenser ID:** N / A ☐ Dispenser Containment Sensor(s) Model: ____ ☐ Shear Valve(s) ☐ Dispenser Containment Float(s) and Chain(s)
Dispenser ID: N / A ☐ Dispenser Containment Sensor(s) Model: ____ ☐ Shear Valve(s) ☐ Dispenser Containment Float(s) and Chain(s)	**Dispenser ID:** N / A ☐ Dispenser Containment Sensor(s) Model: ____ ☐ Shear Valve(s) ☐ Dispenser Containment Float(s) and Chain(s)

C. Results of Testing/Servicing

Software Version Installed: 324.01

Complete the following checklist:

☑ Yes	☐ No*	Is the audible alarm operational?
☑ Yes	☐ No*	Is the visual alarm operational?
☑ Yes	☐ No*	Were all the sensors visually inspected, functionally tested, and confirmed operational?
☑ Yes	☐ No*	Were all sensors installed at lowest point of secondary containment and positioned so that other equipment will not interfere with their proper operation?
☐ Yes	☐ No* ☑ N/A	If alarms are relayed to a remote monitoring station, is all communications equipment (e.g. modem) operational?
☐ Yes	☐ No* ☑ N/A	For pressurized piping systems, does the turbine automatically shut down if the piping secondary containment monitoring system detects a leak, fails to operate, or is electrically disconnected? If yes: which sensors initiate positive shutdown? *(Check all that apply)* ☐ Sump/Trench Sensors ☐ Dispenser Containment Sensors Did you confirm positive shutdown due to leaks and sensor failure/disconnection? ☐ Yes ☐ No
☐ Yes	☐ No* ☑ N/A	For tank systems that utilize the monitoring system as the primary tank overfill warning device (i.e. no mechanical overfill protection valve is installed), is the overfill warning alarm visible and audible at the tank fill point(s) and operating properly? If so, at what percent does the alarm trigger? ____ %
☐ Yes*	☑ No	Was any monitoring equipment replaced? If yes, identify specific sensors, probes, or other equipment replaced and list the manufacturer name and model for all replacement parts in section G, below.
☐ Yes*	☑ No	Was liquid found inside any secondary containment systems designed as dry systems? *(Check all that apply)* ☐ Product ☐ Water *If yes, describe causes in Section G, below.*
☑ Yes	☐ No*	Was monitoring system set-up reviewed to ensure proper settings? (Attach set-up reports, if applicable)
☑ Yes	☐ No*	Is all monitoring equipment operational per manufacturer's specifications?

*** In section G below, describe how and when these deficiencies were or will be corrected.**

Site Address: 2577 W Sequim Bay RD Date of Testing/Servicing: 2018-03-19

D. In - Tank Gauging/ SIR Equipment

☐ Check this box if tank gauging is used only for inventory control.
☐ Check this box if no tank gauging or SIR equipment is installed.

This section must be completed if in-tank gauging equipment is used to perform leak detection monitoring.

☑ Yes	☐ No*	Has all input wiring been inspected for proper entry and termination, including testing for ground faults?
☑ Yes	☐ No*	Were all tank gauging probes visually inspected for damage and residue build-up?
☑ Yes	☐ No*	Was accuracy of system product level readings tested?
☑ Yes	☐ No*	Was accuracy of system water level readings tested?
☑ Yes	☐ No*	Were all probes reinstalled properly?
☑ Yes	☐ No*	Were all items on the equipment manufacturer's maintenance checklist completed?

***In section G below, describe how and when these deficiencies were or will be corrected.**

E. Line Leak Detectors (LLD):

Complete the following checklist: ☐ Check this box if LLD's are not installed

☑ Yes	☐ No*	For equipment start-up or annual equipment certification was a leak simulated to verify LLD performance? *(Check all that apply)* Simulated leak rate: ☑ 3 g.p.h (1); ☐ 0.1 g.p.h. (2.); ☐ 0.2 g.p.h. (2.).
	☐ N/A	Notes: 1. Required for equipment start-up certification and annual certification. 2. Unless mandated by local agency, certification required only for electronic LLD Startup.
☑ Yes	☐ No*	Were all LLD's confirmed operational and accurate within regulatory requirements?
☑ Yes	☐ No*	Was the testing apparatus properly calibrated?
☑ Yes	☐ No*	For mechanical LLD's , does the LLD restrict product flow is it detects a leak?
	☐ N/A	
☐ Yes	☐ No*	For electronic LLD's, does the turbine automatically shut off if the LLD detects a leak?
	☑ N/A	
☐ Yes	☐ No*	For electronic LLD's, does the turbine automatically shut off if any portion of the monitoring system is disabled or disconnected?
	☑ N/A	
☐ Yes	☐ No*	For electronic LLD's, does the turbine automatically shut off if any portion of the monitoring system is malfunctions or fails a test?
	☑ N/A	
☐ Yes	☐ No*	For electronic LLD's, have all accessible wiring connections been visually inspected?
	☑ N/A	
☑ Yes	☐ No*	Were all items on the equipment manufacturer's maintenance checklist completed?

***In section G below, describe how and when these deficiencies were or will be corrected.**

F. Certification - I certify that the equipment identified in this document was inspected/serviced in accordance with the manufacturer's guidelines. Attached to this Certification is information (e.g. manufacturers' checklist) necessary to verify that this information is correct. For any equipment capable of generating such reports, I have also attached a copy of the; *(Check all that apply)*

G. Comments

☐ System set-up ☐ Alarm History Report

Technician Name: Michael Wertz Signature: Michael Wertz

Mfg. Cert.#: B35175 ICC# 8082204-U3 License No.:

Testing Company Name: SME Solutions, LLC Phone No.: (253) 572-3822

Testing Company Address: 10107 South Tacoma Way Date of Testing/Servicing: 2018-03-19

SME SOLUTIONS, LLC

10707 S. Tacoma Way
Suite A-2
Lakewood, WA. 98499
(253) 572-3822

2800 N.W. 31st. Ave
Portland, OR. 97210
(503) 946-0000

FINAL REPORT

TO: John Wayne Marina
2577 W Sequim Bay RD
Sequim WA

DATE: 3/19/2018

On 3/19/2018 , Petro-Tite Line System Tests were performed

at 2577 W Sequim Bay RD Sequim WA .

A description of the line system test results is as follows:

Product Line	Volume Change	Bleed Back	Meets Minimum Tolerances Accepted By Petro-Tite
Diesel	+/-.0000 GPH	+.049	YES (✓) NO ( )
Unleaded	+/-.0000 GPH	+.045	YES (✓) NO ( )
			YES ( ) NO ( )
			YES ( ) NO ( )
			YES ( ) NO ( )

The following line test tolerances are accepted by Pupora Engineering:
SUCTION SYSTEM: One hour indicated leak rate of +/- 0.025 gallons.
Bleed Back Tolerance + 0.050 gallons.
Acceptable Test Pressure: Not more than 15 p.s.i.g. and not less than 5 p.s.i.g.

SUBMERSIBLE SYSTEM: One hour indicated leak rate +/- 0.010 gallons.
Bleed Back Tolerance + 0.050 gallons.
Acceptable Test Pressure: 150 percent of operating pressure but not less than 5 p.s.i.g.

A line test must be performed for a minimum of one hour to be considered valid.

A copy of the actual test data is enclosed. Please do not hesitate to call us if you have any questions or if we can be of further service to you.

SME Signature: M. Wert Printed Name: Mike Wertz

DATA CHART FOR USE WITH PETROTITE LINE TESTER

JOB #: 253289

STATION NUMBER: 2577

DATE: 2018-03-19

LOCATION: John. Wayne Marina 2577 W Sequim Bay RD Sequim WA 98382

OWNER: John Wayne Marina

OPERATOR: John Wayne Marina

REASON FOR TEST:

Annual

TEST REQUESTED BY: John Wayne Marina

SPECIAL INSTRUCTIONS: Test Leak Detectors

CONTRACTOR OR COMPANY MAKING TEST

MECHANIC(S) NAME: Michael Wertz

IS A TANK TEST TO BE MADE WITH THIS LINE TEST? ☐ YES ☑ NO

MAKE AND TYPE OF PUMP OR DISPENSER (SUCTION OR SUBMERSIBLE) Submersible

WEATHER Sunny TEMPERATURE IN TANKS _____ °F _____ °C

COVER OVER LINE Concrete BURIAL DEPTH 36"

IDENTIFY EACH LINE AS TESTED	TIME (MILITARY)	LOG OF TEST PROCEDURES, AMBIENT TEMPERATURE, WEATHER, ETC.	PRESSURE Psi OR kPa		VOLUME READING			REMARKS SIZE, LENGTH & TYPE OF LINE, # FLEX CONNECTORS CONCLUSION, REPAIRS AND COMMENTS
			BEFORE	AFTER	BEFORE	AFTER	NET CHANGE	
Diesel	1030	Pre Stretch		60				Line Results : +/-.0000 GPH
	1100	Start Test		50				
	1115	1st Reading	50	50	0.058	0.058	0.0000	
	1130	2nd Reading	50	50	0.058	0.058	0.0000	
	1145	3rd Reading	50	50	0.058	0.058	0.0000	
	1200	4th Reading	50	50	0.058	0.058	0.0000	
		Bleed Back	50	0	0.010	0.059	-0.0490	OK

DATA CHART FOR USE WITH PETROTITE LINE TESTER WO# : 253289

Unleaded	1030	Pre Stretch		60				Line Results : +/-.0000 GPH
	1100	Start Test		50				
	1115	1st Reading	50	50	0.058	0.058	0.0000	
	1130	2nd Reading	50	50	0.058	0.058	0.0000	
	1145	3rd Reading	50	50	0.058	0.058	0.0000	
	1200	4th Reading	50	50	0.058	0.058	0.0000	
		Bleed Back	50	0	0.010	0.055	-0.0450	OK

TEST RESULTS

Comments:

Line Identification	Pass / Fail	Net Volume Change per Hour	Date Tested
Unleaded	Pass	+/-.0000 GPH	2018-03-19
Diesel	Pass	+/-.0000 GPH	2018-03-19

CONTRACTOR CERTIFICATION

Tech: Michael Wertz

X M. Wert
Signature

CERTIFICATION # 8082204-U3

Mechanical Leak Detector Test Data Sheet

Site Name John Wayne Marina Date 2018-03-19

Address 2577 W Sequim Bay RD

Sequim WA 98382

Test Information

	1	2	3	4	5
Product	Unleaded	Diesel			
Manufacturer	Red Jacket	Red Jacket			
Model	FX2V	FX2DV			
Full Operating Pressure (PSI)	26	32			
Line Bleed Back (mL)	155	190			
Trip Time (sec)	3	6			
Metering Pressure (PSI)	12	16			
F/E Holding Pressure (PSI)	20	24			
Test Leak Rate (ml/min)(gph)	3 GPH	3 GPH			
PASS or FAIL	**Pass**	**Pass**			

Comments

This letter certifies that the annual leak detector tests were performed at the above referenced facility according to the equipment manufacturers procedures and limitations and the results as listed are to my knowledge true and correct. The mechanical leak detector test pass/fail is determined using a low flow threshold trip rate of 3 gph at 10 PSI.

Inspected By: Contractor SME Solutions

Technician Michael Wertz Lic# 8082204-U3

Signature M. Wert

APPENDIX G: COST ESTIMATE DETAIL FOR PAVING, RIPRAP, & MARINA REPLACEMENT

Paving Parking Lot:
NOTE: Costs include contractor general conditions, mob/demob, and OH&P

North Lot				
Pavement Demo	7000	SY	$15	$105,000
Haul & Dispose	600	CY	$25	$15,000
Fine Grade	7,000	SY	$1	$7,000
HMA (3")	600	ton	$160	$96,000
Pavement Markings	2,600	LF	$1	$2,600
				$225,600
Central Lot				
Pavement Demo	4700	SY	$17	$79,900
Haul & Dispose	400	ton	$25	$10,000
Fine Grade	4,700	SY	$9	$42,300
HMA (3")	400	ton	$130	$52,000
Pavement Markings	2,440	LF	$1	$2,440
				$186,640
South Lot				
Pavement Demo	5500	SY	$17	$93,500
Haul & Dispose	500	ton	$25	$12,500
Fine Grade	5,500	SY	$9	$49,500
HMA (3")	500	ton	$130	$65,000
Pavement Markings	2,460	LF	$1	$2,460
				$222,960
Traffic Control	400	HR	$50	**$20,000**
Stormwater Treatment	1	LS	$100,000	**$100,000**
			TOTAL:	**$755,200**

Rip Rap Repairs:
NOTE: Costs include contractor general conditions, mob/demob, and OH&P

Shoreline & Breakwater Restoration

Furnish & Place 5% Heavy Loose Rip Rap Replacement	1000	Ton	$85	$85,000
Furnish & Place 5% Light Loose Rip Rap Replacement	800	Ton	$80	$64,000
			TOTAL:	**$149,000**

Marina Rehabilitation:
NOTE: Costs include contractor general conditions, mob/demob, and OH&P, but do not include electrical

Marina Rehabilitation

Mob/Demob	1	LS	$50,000	$50,000
Temp Erosion & Sedimentation Control	1	LS	$30,000	$30,000
Remove & Dispose Existing Floats incl. Utilities	52312	SF	$15	$784,680
Remove & Dispose Existing Timber & Steel Piles	170	EA	$1,000	$170,000
Furnish & Install New Concrete Floats	52,312	SF	$135	$7,062,120
Furnish & Install Float Appurtenances (cleats, life rings, etc)	1	LS	$520,000	$520,000
Furnish & Install New Steel Piles	170	EA	$8,000	$1,360,000
Furnish & Install Fire Protection System (dry standpipe)	1	LS	$600,000	$600,000
Furnish & Install Potable Water System	1	LS	$400,000	$400,000
Furnish & Install Electrical System (incl power pedestals)	1	LS	$0	$0
			TOTAL:	**$10,976,800**

ReidMiddleton

728 134th Street SW, Suite 200
Everett, WA 98204-5322
(425) 741-3800
www.reidmiddleton.com
File No. 242019.001